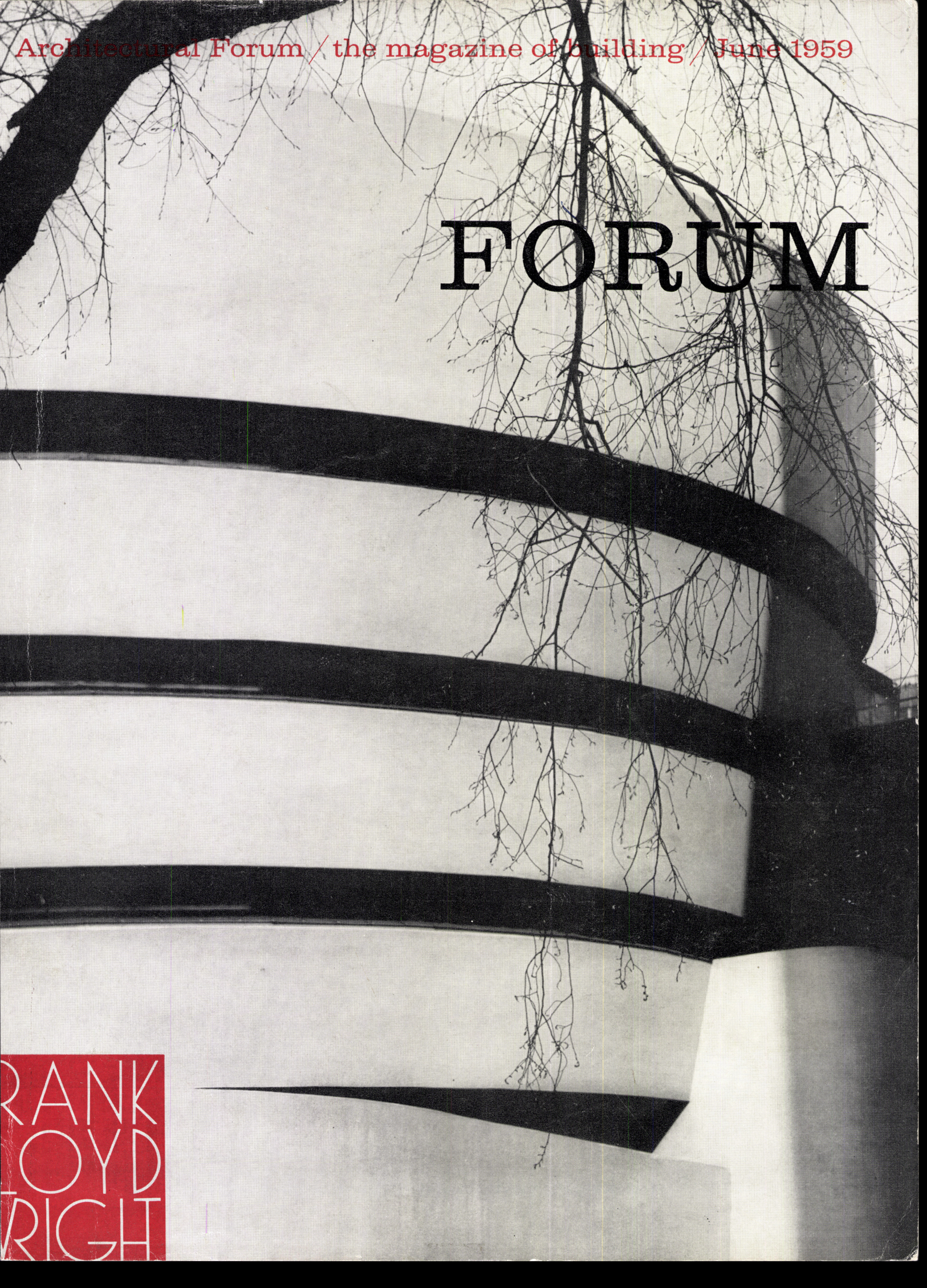
Architectural Forum / the magazine of building / June 1959

FORUM



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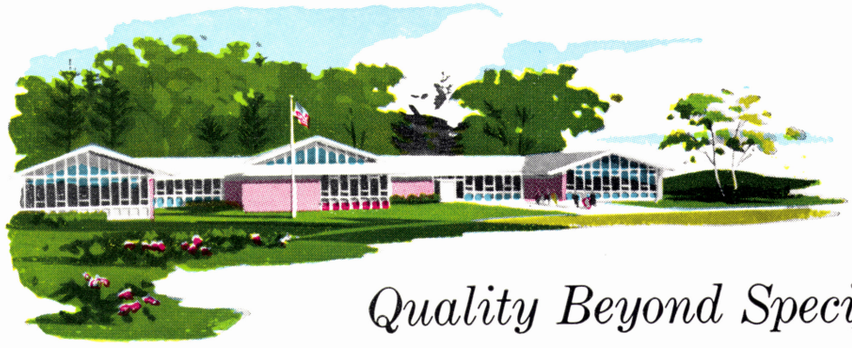
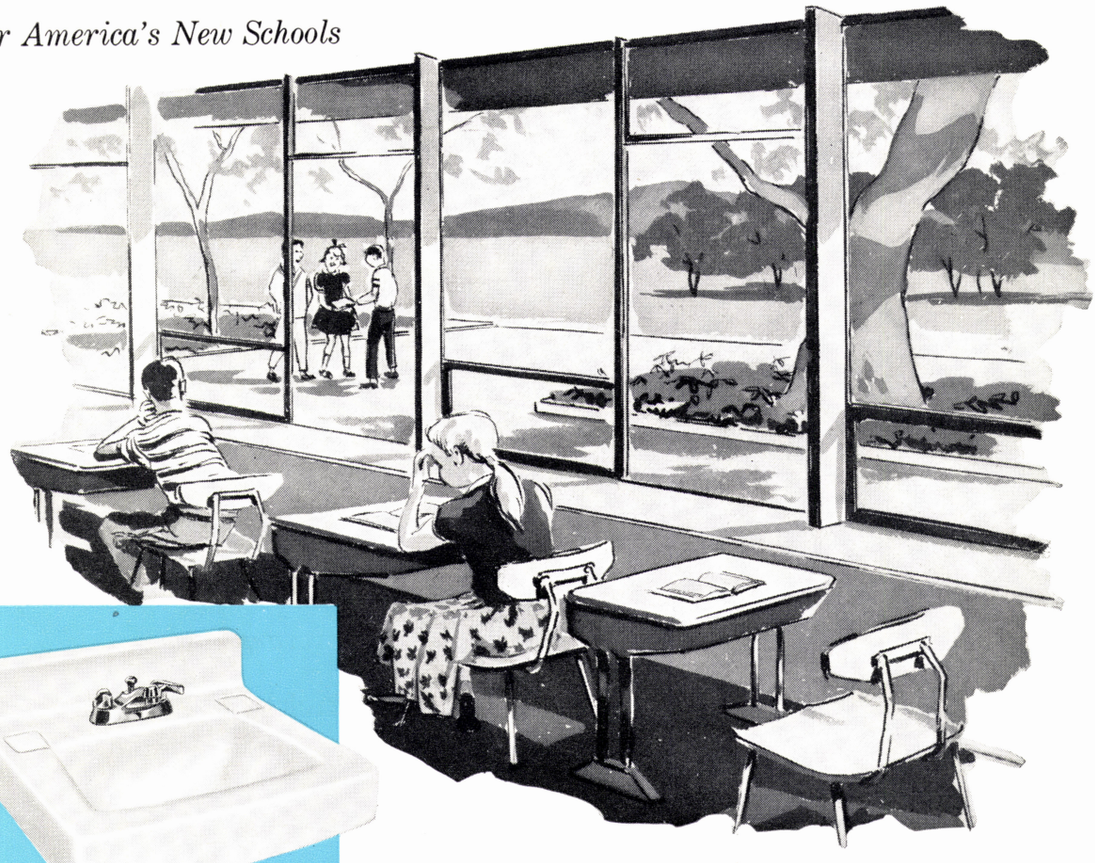
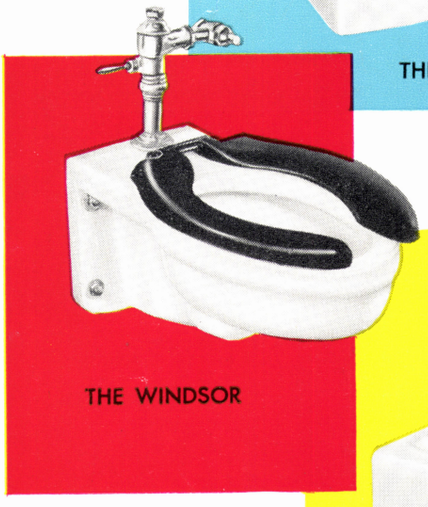


Quality Beyond Specification

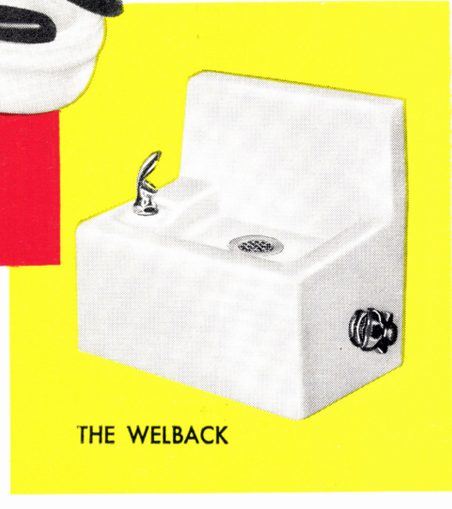
. . . for America's New Schools



THE TRIMLINE



THE WINDSOR



THE WELBACK

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RHEEM-RICHMOND's outstanding quality derives from insistence on the best at every step . . . starting with the basic enameling cast iron and china clays; applying superior design and engineering; entrusting the manufacture only to old line craftsmen proud of their work; ending with the most thorough inspection system in the industry. You will see the result in any display of RHEEM-RICHMOND fixtures . . . whether for schools or other institutional, commercial or residential installations. Please write for specification literature.

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A SPECIAL PORTFOLIO

Frank Lloyd Wright

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His latest, most controversial building shown for the first time.

The Taliesins 132
His own homes remain the truest measure of Wright the man.

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A lifelong search traced in the evolving patterns of his house plans.

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ART OF ARCHITECTURE

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Perhaps the least understood aspect of the great art of architecture is the simple question: How does the human eye see "empty" space?

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On a base scaled to rival the pedestals of antiquity stands the nation's first monument in the modern style—the new Air Force Academy.

BUSINESS OF BUILDING

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Though a few business organizations are still in opposition, a growing roster of businessmen is providing the steam to make renewal work.

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Steel for a flying roof 170
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Cover: Detail of Frank Lloyd Wright's Guggenheim Museum, New York (story, page 126). Photo by George Cserna.

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260 Advertising index.

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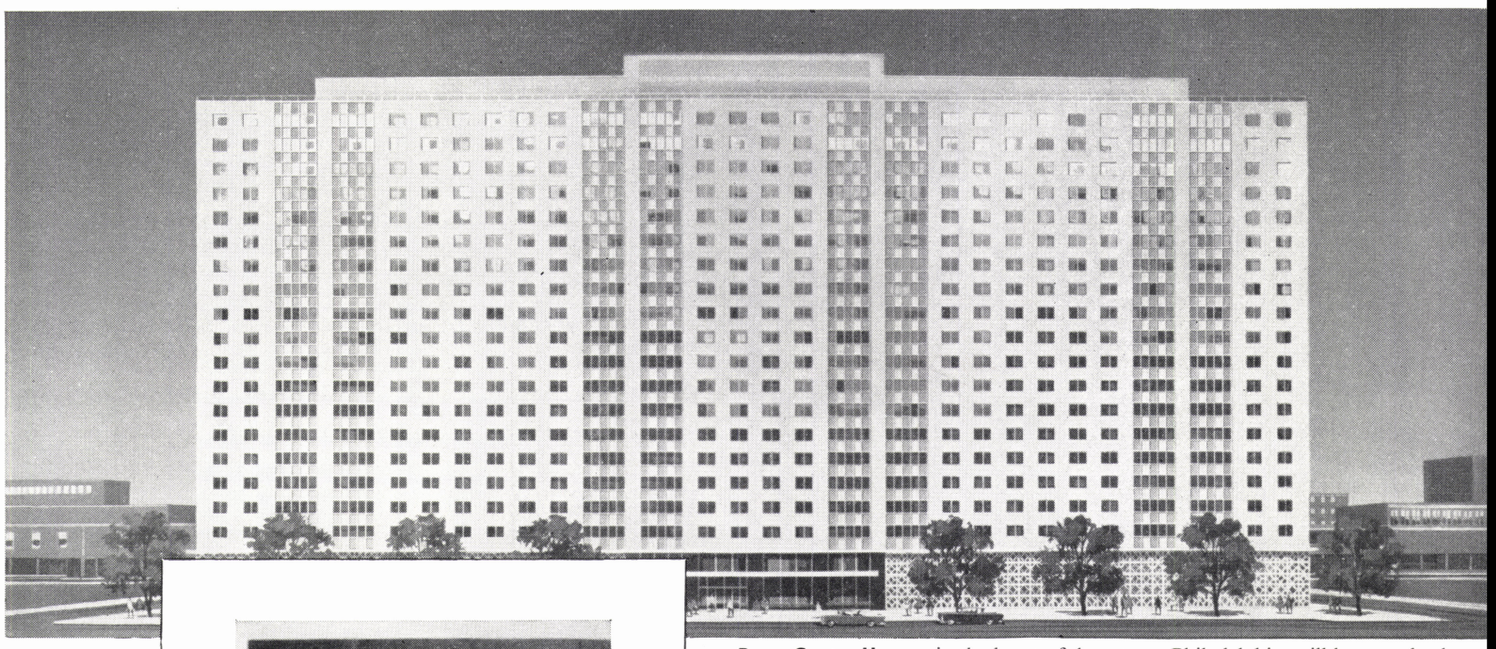
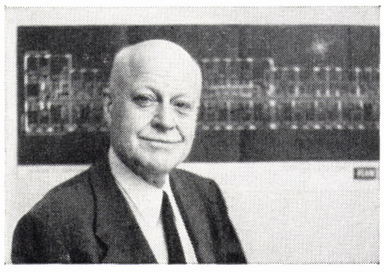
1,044 General Electric Built-In large apartment in Philadelphia's



Penn Center House, in the heart of downtown Philadelphia, will be completely air conditioned by General Electric Built-In *Thinline* air conditioners.



"**We wanted** a separate air conditioning system for each apartment," says Dr. Joseph F. Noonan, president of Penn Center House, ". . . so tenants might control their own comfort. And since each unit is independent of the others, we don't have to worry about shutdowns as we would with a central system."

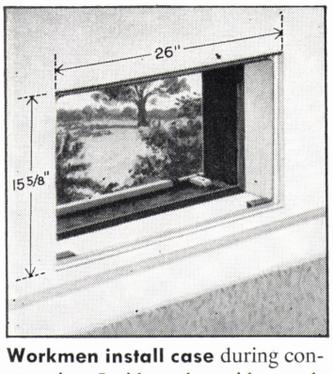
ONLY General Electric Built-In *Thinline* Air Conditioners have decorator panels that blend with the walls.

That's why all 432 apartments in Penn Center House will have Built-In *Thinline* air conditioning.

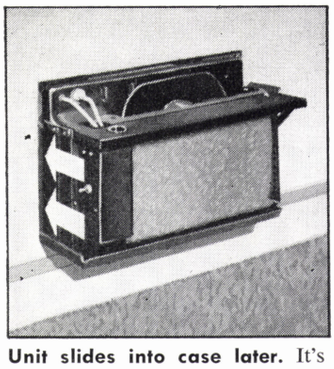
"We visited major manufacturers to see how air conditioners are made," says a representative of R. M. Shoemaker Co., the prime contractor on Penn Center House. "General Electric *Thinline* units won from an engineering standpoint. They are rugged units, built to last yet easy to service."

Each living room and bedroom in Penn Center House will have a General Electric Built-In *Thinline* air conditioner. Alu-

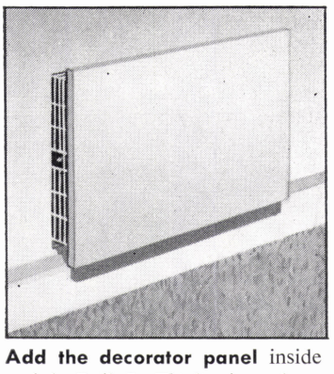
See how easy it is to install the General Electric Built-In Thinline.



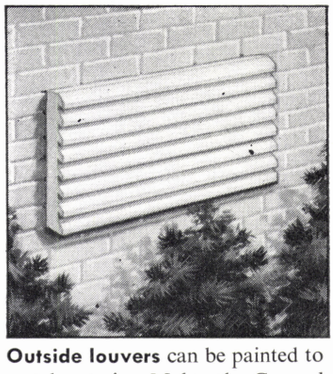
Workmen install case during construction. Inside and outside panels protect the case until building is finished.



Unit slides into case later. It's easy to handle and compact because of space-saving Spine-Fin Cooling system and new compressor.



Add the decorator panel inside and the Built-In *Thinline* is ready to use. And it's so neat you hardly know it's in the room.



Outside louvers can be painted to match exterior. Makes the General Electric Built-In *Thinline* blend with the building.

Record boom in home building, highways, and stores points to bigger-than-forecast year: $53 billion in '59

"Everybody thought building would be good this year—but this is remarkable." That was the comment of one construction economist last month as statistics showed that new construction was going at a seasonally adjusted rate of over $54 billion a year. Not only is this a record rate, but it calls for upward revision of earlier building forecasts. While the pace is likely to slacken later in the year, the record of the first four months of construction indicates a 1959 total of $53 billion—about $1 billion better than FORUM's forecast late in 1958.

The strength of this building boom continues to be concentrated in two major areas—private residential building (up 29 per cent in the first four months) and public building (up 17 per cent). Housing starts in the same period were the highest on record (422,200), and the seasonally adjusted rate was 4,000 units higher than the previous four-month peak of 1,362,000 in 1955. HHFAdministrator Norman Mason last month predicted housing starts for the year would total 1,285,000, which would make this the third best year on record. Building industry leaders, however, are still sticking to their predictions of 1.3 million for the year, assuming the housing bill is not vetoed (page 6). Because starts under FHA and VA programs have expanded from one quarter to a third of total nonfarm starts in the past year, the home-building boom could be seriously affected by further delay in signing into law an omnibus housing bill. Another increasingly worrisome point in estimates of home building's continuing strength is the price and availability of mortgage credit, which lately has tightened (page 11).

Other private construction is not faring so well as home building. Total private nonresidential building is 5 per cent under the first four months of 1958, largely due to a 33 per cent decline in industrial construction. If this drop is ignored, however, nonresidential building is at about the same level it was a year ago. A 19 per cent increase in new stores, restaurants, and garages has more than offset a 9 per cent decline in office building. Other declines showed up in hospital and other institutional building (down 6 per cent) and in telephone utility facilities (down 14 per cent).

The slump in industrial building has lately shown some signs of abating. The year-to-year drop in April was only 28 per cent, compared to 31 per cent and 37 per cent in March and January respectively. McGraw-Hill's recent forecast of $34.2 billion of capital spending in 1959 is somewhat higher than the SEC-Commerce forecast of several months ago, and 7 per cent higher than 1958 spending. Perhaps the most hopeful factor in a possible turnaround is in corporate profits. The *Wall Street Journal* has estimated that corporate profits bounced up 54 per cent in the first quarter of this year over last. If profits continue to climb, corporate expansion plans will eventually come down from the shelf.

Public building continues to boom

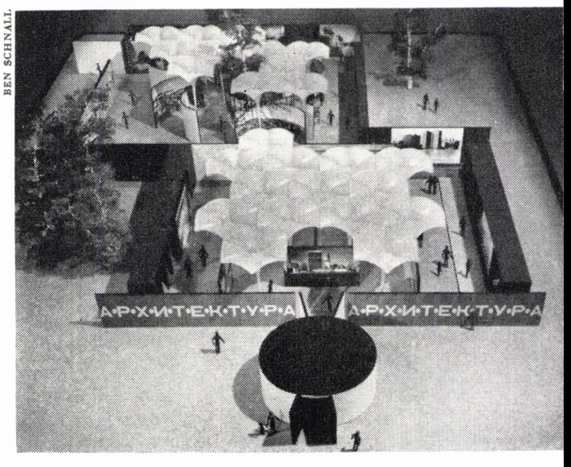
continued on page 6

BOX SCORE OF CONSTRUCTION

(Expenditures in millions of dollars)

	Apr.	Jan.-Apr.		
PRIVATE BUILDING	1959	1959	1958	±%
Nonresidential	629	2,555	2,817	—9
Industrial	156	657	979	—33
Office buildings, warehouses	146	591	652	—9
Stores, restaurants, garages	126	476	401	+19
Religious	67	277	254	+9
Educational	40	172	168	+2
Hospital, institutions	46	188	201	—6
Social, recreational	36	139	104	+34
Miscellaneous	12	55	58	—5
Residential (nonfarm)	1,714	6,061	4,709	+29
Farm	124	434	443	—2
Public utilities	438	1,624	1,622	*
All other private	13	52	48	+8
Total Private	2,918	10,726	9,639	+11
PUBLIC BUILDING				
Nonresidential	383	1,427	1,379	+3
Industrial	30	114	117	—3
Educational	228	867	886	—2
Hospital, institutions	36	129	109	+18
Administrative, service	51	180	136	+32
Other nonresidential	38	137	131	+5
Residential	92	368	237	+55
Military	118	426	317	+34
Highways	430	1,275	1,020	+25
Sewer, water systems	115	427	406	+5
Public service	37	121	109	+11
Conservation, development	84	293	268	+9
All other public	20	67	35	+91
Total Public	1,279	4,404	3,771	+17
GRAND TOTAL	4,197	15,130	13,410	+13

** Change of less than 1 per cent.*



BEN SCHNALL

U.S. ARCHITECTURE IN MOSCOW

When the American National Exhibition in Moscow opens next month, Russian visitors will get a close-up look at about 100 examples of contemporary American architeture (ranging from Frank Lloyd Wright's Taliesin to Mies's glass apartments). Under Architect George Nelson's plastic umbrellas, Architects Peter Blake and Julian Neski will use special techniques to create the illusion of looking at actual buildings. Among these techniques are the use of stereo viewers, 12-ft. high photographs (one-point perspective made at eye-level height), and some objects, such as street furniture, placed in front of photographs to enhance the illusion of a third dimension.

along, standing 17 per cent higher in the first four months of this year over 1958, when a record was set in this category. As has been the case for many months, highway construction and military building continue to pace the public construction boom. Highway building had a rise of 25 per cent to $1.3 billion in the first fourt months of this year, while military building, with increasing amounts going into new missile facilities, rose 34 per cent.

School construction is still the biggest trouble spot in public building, and recent voters' revolts over school bond issues intensify the problem. In the first quarter school building declined 1 per cent, but in April, it dropped 4 per cent under a year ago, and contract awards in the first quarter were running 20 per cent below 1958. Various proposals for federal aid have been rumbling in Congress, but it is extremely unlikely that the Administration will go along with any of them. Only last month Arthur S. Flemming, secretary of the Department of Health, Education and Welfare, asked Congress to reduce federal aid to schools in areas that have large federal installations by about 40 per cent below the $225 million voted by the House for fiscal 1960.

Deadlock broken, House passes housing bill

The deadlock that held the omnibus housing bill in the House Rules Committee for nearly three months was finally broken last month when the House passed by a 261-to-160 vote a slightly watered-down version of Representative Albert Rains' bill. The $2.1 billion Rains bill was not sent to joint Senate-House conference, however, until after a coalition of Republicans and Southern Democrats had taken a last desperate tilt at it.

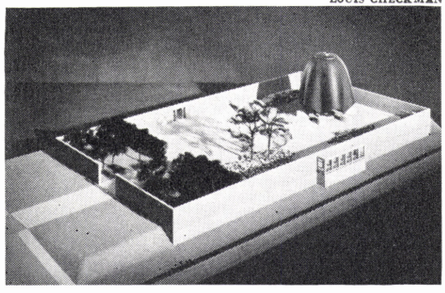
When the Rules Committee finally voted out the Rains bill, it provided for action first on a substitute measure, introduced by Representative A. Sydney Herlong Jr. (D, Fla.). This measure was even more conservative than the $1.6 billion Administration bill. It asked for $300 million less in new spending authority and cut deep into urban renewal, providing only $100 million in grants for this year and $250 million for each of the two succeeding years. Although this was less than the President had asked and certainly would not put the program on a sustaining basis, as the Administration had often requested, Housing & Home Finance Administrator Norman Mason quickly announced his support of the Herlong measure as a "moderate approach." Mason even endorsed the Herlong provisions that would give the Appropriations Committee power to pass on appropriations of renewal funds, and this became the major amendment to the Rains bill as it was finally passed. It seemed certain, however, that the amendment would be killed in House-Senate conference.

The Administration's backing for the Herlong bill scuttled its own bill by encouraging many Republicans to vote for the substitute measure. The Herlong bill was defeated by a relatively slim margin, 203 to 177.

When the House had finally cleared its housing legislation, the key question remained whether or not the President would veto the measure that would come to his desk from House-Senate conference. The Democratic leadership in Congress was cautious because the House had failed—by four votes—to override the veto of the Rural Electrification measure a month ago, and would probably adjust the final bill to draw as little fire as possible. However, the Democrats felt they could override a veto on housing, because, for one thing, many Republicans representing big-city districts might not be able to support a veto which would stymie the urban renewal program.

Another major building area that may run into trouble unless Congress acts is the booming highway program. Last month, the President made a special plea to Congress for a boost of 1½¢ in the federal gasoline tax rate to replenish dwindling Highway Trust funds. Under the terms of the Highway Act of 1956, federal funds can come only from revenues on gasoline, tires, and other special user taxes, so Congress is hard put to find alternatives. Democrats have been cool toward the measure, but probably would not want to see the highway program crippled. So far, no Republicans have introduced a gasoline-tax increase bill, but it is likely that such a move will soon be made. The deficiency in the fund for fiscal 1960 is estimated at $241 million; if this is not made up, the federal aid program will come to a halt next month.

LOUIS CHECKMAN



JOHNSON'S INDIANA SHRINE

The folded-petal-shaped structure above is the New Harmony Shrine, now being built at New Harmony, Ind. Designed by Philip Johnson, it is one of 66 buildings featured in a traveling exhibit of architectural models and photographs called "Form Givers at Mid-Century," sponsored by TIME Magazine. The show will be at New York's Metropolitan Museum this month. Johnson's shrine, the only building in the show which had not been previously published, is made of cedar shingles laid over a bell-shaped frame set on six oval stone blocks. Inside the structure is a statue of the Virgin Mary by Sculptor Jacques Lipchitz.

Executives look at renewal in ACTION

In its first major move since it changed its approach to urban problems, ACTION last month sponsored a three-day session of planners, government officials, and business executives at Newark, N. J. ACTION President James W. Rouse, who recently enunciated ACTION's policy shift from general research and education on urban problems to promoting positive programs in individual cities, pronounced the objective of the conference: "To lift our expectancy regarding the future of our cities, and to increase our intolerance of the disorder and decay, ugliness and inefficiency which have become the mark of an American city."

Rouse and ACTION are particularly concerned about the lack of "intolerance" among business executives, and the conference was designed mainly to make big business leaders more familiar with the consequences of urban decay and what can be done about it. The 500 persons attending were fed a heavy diet of fact and opinion, in special papers and panel sessions, much of it emphasizing the role that businessmen could and should play in urban redevelopment.

Following the Newark conference, 27 executives from companies like Alcoa, Reynolds Aluminum Service Corp., Chase Brass & Copper, American Standard, and Owens-Corning Fiberglas, were taken on a special two-week training course to Baltimore, Detroit, and New Haven to see for themselves how renewal has taken hold in those

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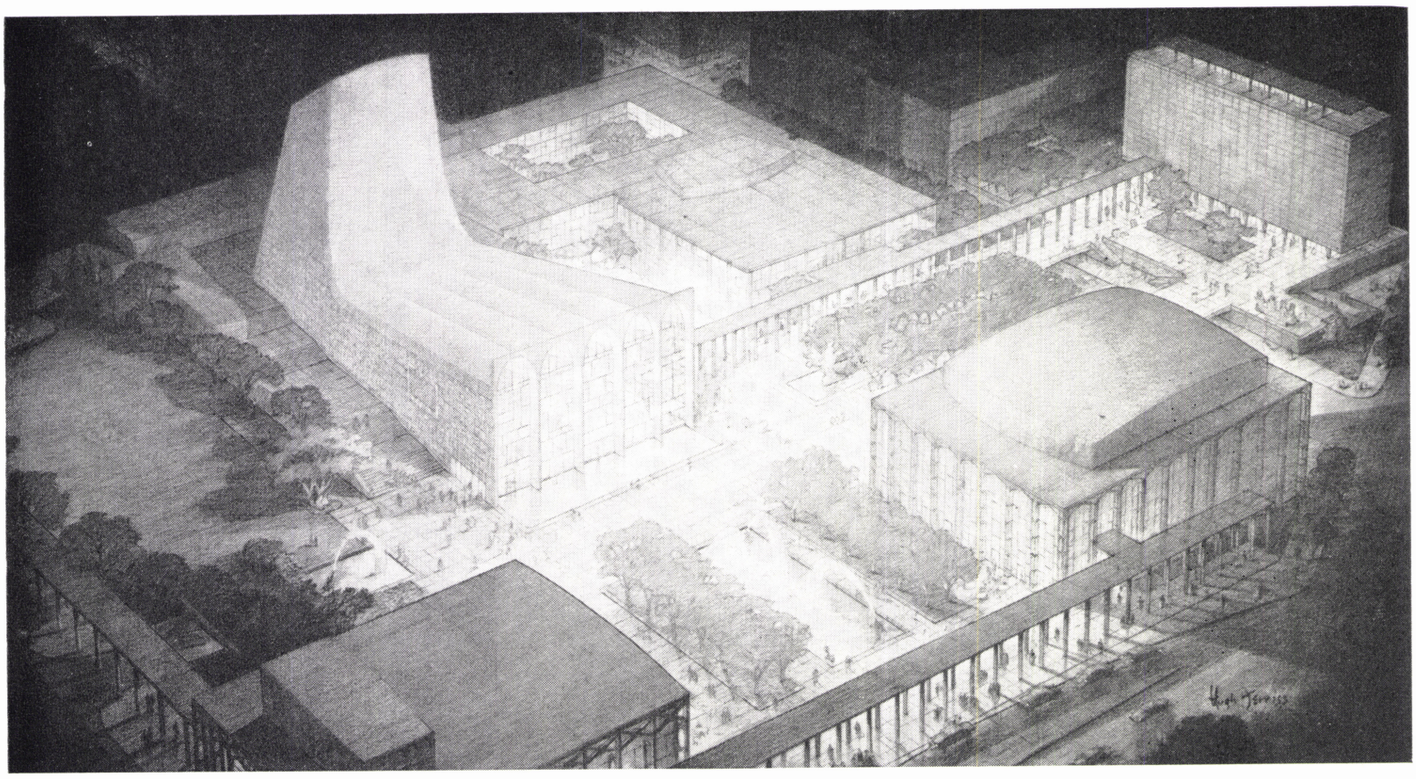


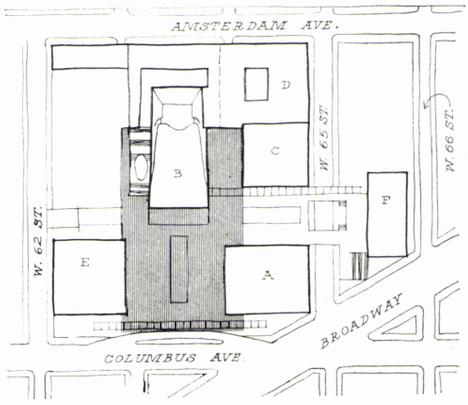
Lincoln Center starts building Philharmonic Hall

Ground was broken last month for the first building in what promises to be a landmark in modern public architecture —the Lincoln Center for the Performing Arts on Manhattan's Lincoln Square. President Eisenhower thrust a silver shovel into the loosened dirt at the site of the $9.8 million Philharmonic Hall, scheduled for completion by the summer of 1961. Designed by Max Abramovitz, the hall will be the first of six major buildings comprising the center. In the rendering (above) and the site plan (right), the buildings are shown in their relationship to each other and the plaza. So far, only the design for the Philharmonic is definite, but Wallace K. Harrison's design for the Metropolitan Opera House (large building in center of picture above) is fairly well established except for the height of the tower that would sweep up on cables from the vaulted entrance. Other designs shown in the rendering are only approximations. (Other architects include Philip Johnson, who is designing the Dance and Operetta Theater; Pietro Belluschi, the Juilliard School; Eero Saarinin with Jo Mielziner, as collaborating designer, the Repertory Theater; and Skidmore, Owings & Merrill's Gordon Bunshaft, the Library-Museum.

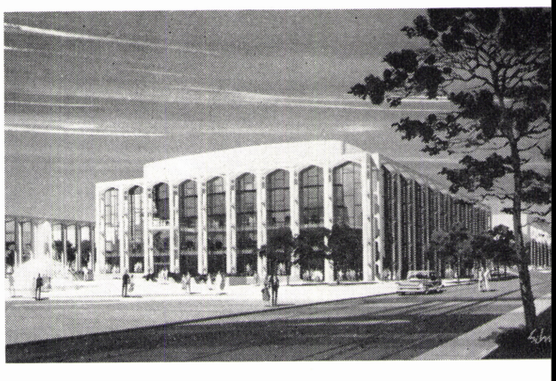
Abramovitz' Philharmonic is basically a glass rectangle framed in masonry columns. The architect settled on a rectangular shape, rather than the fan shape that has been the vogue for most recent symphonic halls, after intensive study. Acoustical demands were, of course, foremost among the considerations. Abramovitz originally planned to build his concrete columns and arches in the precast "Schockbéton" technique used widely in Europe (most recently proposed for Skidmore, Owings & Merrill's Banque Lambert in Brussels—FORUM, May '59). But, after a personal inspection of several European examples, he is not definite about its use. The Philharmonic's arch design will probably be used as a unifying motif for the whole center, particularly for the covered walks between buildings.

The Philharmonic, with an auditorium five stories high, will seat 2,400, and will feature a stage which can be lowered or raised depending on the use. If lowered to audience level, an extra 100 seats can be arranged on the stage.

The biggest switch in placement of the buildings since the first Lincoln Center layout was announced is that Belluschi's Juilliard School has been moved to the center's northerly half-block where it will be integrated with its residence facilities. Gordon Bunshaft's Library-Museum will rise on the site behind Saarinen's Repertory Theater, where the Juilliard School was originally placed (see site plan).

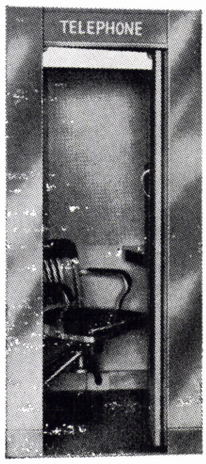


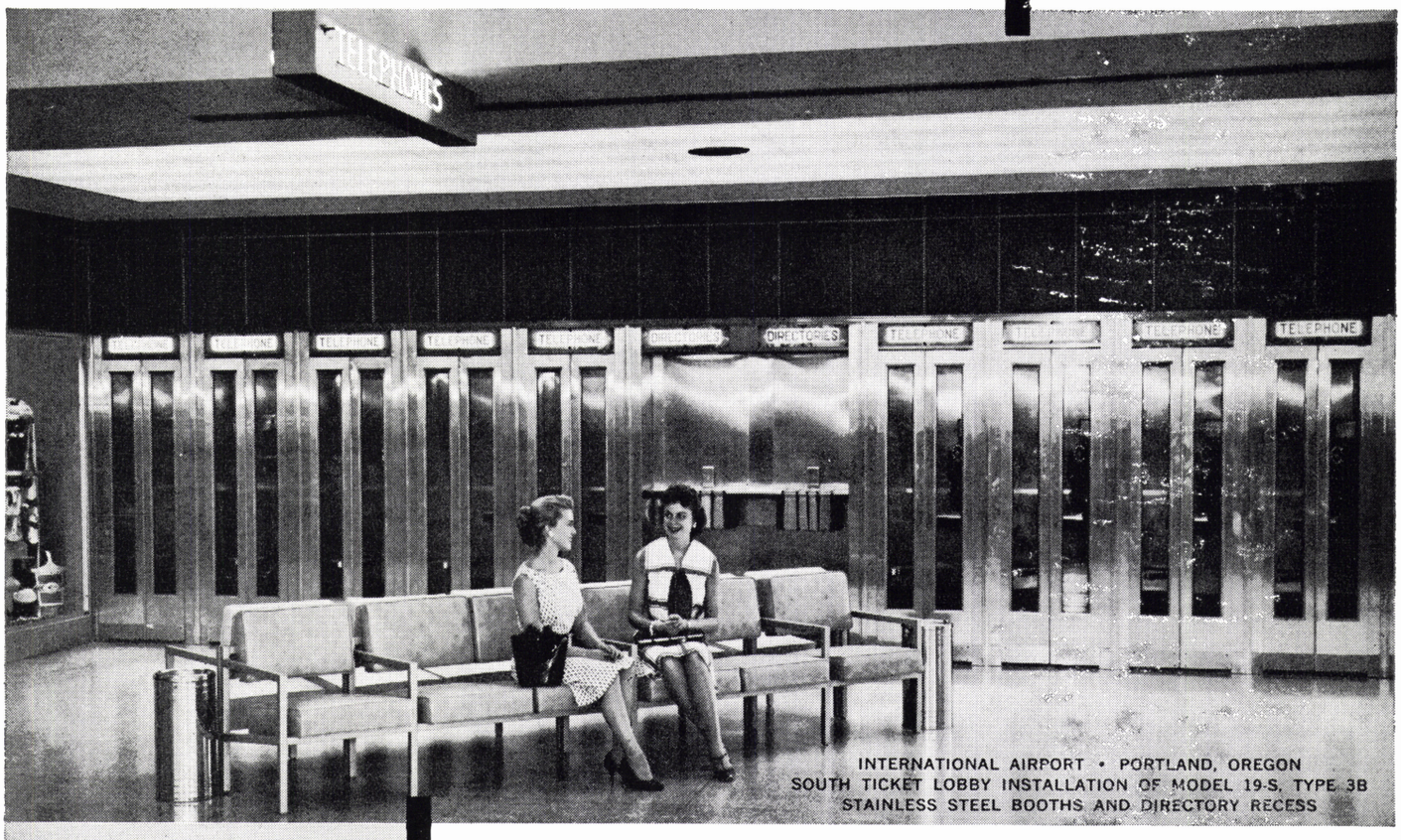
LINCOLN CENTER: THE PLAN TAKES FORM
Max Abramovitz' Philharmonic Hall (A in site plan above; photo below) will be the first building started in the $75 million Manhattan cultural complex, Lincoln Center for the Performing Arts. It will be a glass box framed in precast concrete arches and columns on four sides. The site plan also shows the Opera House (B), the Repertory Theater (C), the Library-Museum (D), the Theater of the Dance (E), and the Juilliard School (F).



WHY MORE AND MORE ARCHITECTS SPECIFY SHERRON STAINLESS STEEL TELEPHONE BOOTHS FOR AIRPORTS, CONVENTION HALLS AND AUDITORIUMS

Shown here is a Sherron "Executive" booth in stainless steel. ▶





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INDEPENDENT

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cities. Thomas R. Reid, director of Civic Affairs for Ford Motor Co. and chairman of ACTION's Seminar Committee, said: "First, we want to provide business leadership with the most useful, tested information and know-how in the priority issues in the American City. Second, we want to charge that leadership with the challenge of creating a new vision for the American City that is at once inspiring and practicable; and third, we want to indoctrinate corporate executive leadership in the ACTION method for dealing with the great tasks that lie ahead."

Before the executives got away on their renewal rounds, the Newark session heard Adlai E. Stevenson outline the familiar array of urban problems with an eloquence that made it sound fresh. And, right at the outset, Stevenson made the planners and executives raise their focus even higher than the difficulties of urban redevelopment itself. "The first charge upon statesmanship as it applies to the American City is . . . that these cities be permitted to survive. . . . The point does not bear laboring. Neither may it be forgotten —lest it become the ultimate irony that Man's forgathering in the City was to simplify his self-destruction."

On the somewhat less pressing problem of redeveloping the American city, Stevenson pitched the problem right to the businessmen when he said: "I suspect that in the long run the clearing of slums will come less as the result of public concern about the people there being poor than as a product of the business community's concern about their being poor customers."

"But," Stevenson added, "there are some parts of this job that just cannot be done at a profit and therefore will not be done privately. . . . It appeared for a while that there was solid recognition of the degree of aid that would have to come from federal sources to support local urban renewal. . . . Of late, there has been considerable doubt cast on both the extent of such aid and its continuance. The plain fact is that those who oppose federal aid for urban renewal are against urban renewal. . . ."

Stevenson pronounced his solid support for the Senate version of an omnibus housing bill (FORUM, Apr. '59), and took a partisan poke at those who say "We can't afford these things. . . . When somebody starts talking about the evil of passing a burden of public debt on to the next generation it makes me want to ask if it is better to pass on a burden of slums, of ignorance, of national weakness."

Brookline's lost opportunity—three top urban renewal designs finish behind a dark horse

Brookline, Mass. is a medium-sized suburb of Boston (pop. 58,000), with only one urban renewal project—a 13-acre sloping site on the main highway between Boston and Worcester. But this seemingly negligible property has become the focus of one of the hottest urban renewal competitions ever held, and one of the bitterest in the town itself and among the competing developers and architects.

Nine redevelopers came forward, aided by such well-known architects as Walter Gropius, Carl Koch, Hugh Stubbins, Ludwig Mies van der Rohe, Victor Gruen, and some lesser known architects as well, to bid from $357,000 to $850,000 for the land. The attractions of this relatively small area, now cluttered with decaying wooden tenements, are its proximity to Boston, its fine view over a park and a sizable pond, and its location at a junction of several main arteries near a new rapid transit station.

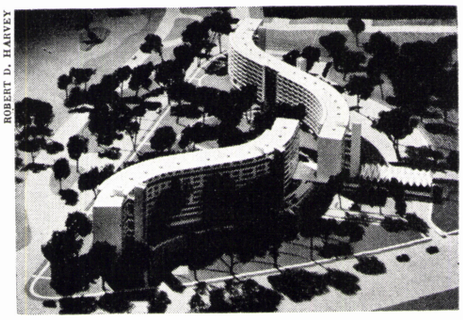
Faced with the problem of choosing one plan from the high-powered array, the Brookline Redevelopment Authority (four men elected by the town meeting and one appointed by the governor) asked in an architectural advisory committee headed by Dean José Luis Sert of the Harvard School of Design. The Authority also hired the Merchants National Bank of Boston to investigate the sponsors' financial backgrounds and the suitability of their plans to the local real estate market.

Dean Sert's committee (Nelson Aldrich of Campbell & Aldrich, and Lawrence B. Anderson, chairman of the department of architecture at MIT and a partner in Anderson, Beckwith & Haible) found the Turner-First Realty proposal (designed by Hugh Stubbins) "the most meritorious" but also commented on three others as having "the greatest interest." These were Perini Corp. (Carl Koch), James H. Scheuer's Farm Redevelopment Corp. (Mayer, Whittlesey & Glass), and Metropolitan Corporation of America (Ludwig Mies van der Rohe), which withdrew after Herbert Greenwald's death. The Merchants National Bank's real estate consultants rated the Perini and Farm Redevelopment proposals highest, while the bank's own financial investigation favored Turner-First Realty, Perini, Farm Redevelopment and Fuller-Rappaport (designed by Victor Gruen Associates).

The Redevelopment Authority, how-

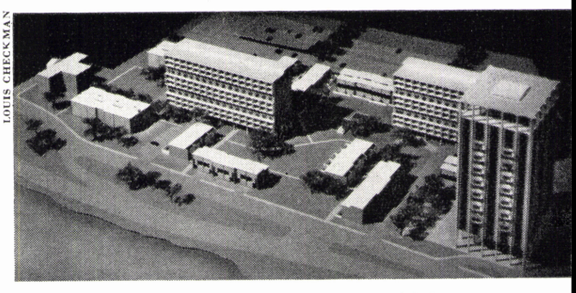
continued on page 11

ROBERT D. HARVEY



"Most meritorious" said consultants of design by Hugh Stubbins: two serpentine high-rise apartments housing middle- and high-income families together in the same buildings, with a small shopping area attached.

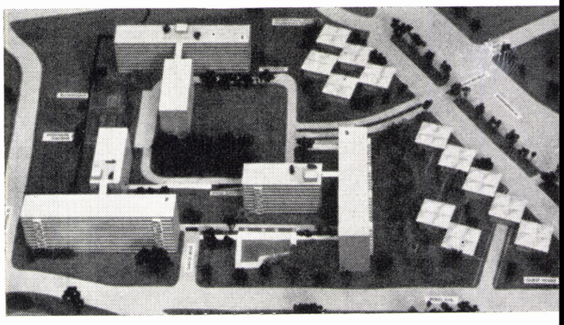
LOUIS CHECKMAN



Mayer, Whittlesey & Glass mixed luxury high-rise apartments and town houses with middle-income apartments in a parklike setting. Two ten-story apartments with individual balconies would house moderate-income families.

ROBERT D. HARVEY

Carl Koch's design features a 24-story luxury apartment tower, and a mix of two- and three-story town houses with some middle-income housing provided in high-rise (12- and 16-story) apartments and row-type garden units.



Winning design, by Architect John Hans Graham, has three identical T-shaped apartments with 200 units of motel cottages (cluster of square buildings, lower right) and community recreation center (upper right).

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ever, ignored all its advisers and voted 3-2 for a dark horse: a proposal by Dr. Daniel Gevinson, a Washington, D.C. dentist who heads the Dalmark Construction Co. (Dalmark is associated in the proposal with Gilbane Co. of Providence, R.I. and Architect John Hans Graham.) Gevinson's proposal had been called "a poor third choice" by the real estate consultants, was listed in the least favored group by the financial consultants, and was not even considered worthy of mention by the architectural advisers.

In the face of these appraisals, all the reasons for the Redevelopment Authority's choice are still not clear. For the record, the majority cited these reasons: the winner's compliance with a height limit of 85 ft. (though several of the other architects had been assured that the height limit could be changed), his promise to return higher taxes to the town and to "do more for relocation" of the area's inhabitants.

Gevinson's proposal will also pay the Authority the highest price for the land. Through a clerical error, Gevinson's land bid was originally listed as $500,000, second to two bids of $550,000 each. (It later developed that Gevinson had actually bid $850,000.) However, when the vote was taken, at least one Authority member thought that Gevinson had bid highest for the land and would pay the highest taxes. Neither of these assumptions was, at the time, correct according to the Authority's information, but the member's vote was undoubtedly swayed by them.

All in all, the Authority's action seems confused and somewhat unreasonable to its consultants. Dean Sert himself was baffled by the vote, and has demanded an explanation. The local League of Women Voters and the Taxpayers Assn. also have demanded explanations. Brookline's town planner, Justin Gray, says simply the vote represents "a lost opportunity for Brookline."

The Authority can change its vote any time before the final contracts with Gevinson and Gilbane are signed, which probably will not be for six months or more. But it appears unlikely that any of the three members who voted for the Gevinson plan will change their minds, unless something comes up to cast doubt either on Gevinson's plan or his ability to execute it. As it stands, Brookline enjoys the unique distinction of having rejected some of the best urban renewal proposals yet seen in the U.S.

Mortgage money tightens as bond prices drop

Through the first four months of this year, the mortgage market appeared to be well insulated from the pressures that had been driving U.S. Treasury bond prices down and yields up, causing municipal comptrollers and corporate treasurers to grumble about tight money. But last month, there were definite signs that the mortgage market's insulation was wearing thin, particularly in the key area of home mortgages.

At Congressional hearings early in May, federal economists warned that "When housing is going strong, you can be pretty sure that money is going to get tight before long." Home building in April hit a record rate (page 5), and discounts on FHA-insured mortgages have rapidly expanded in those areas where home building is greatest. A month ago, discounts of as much as five points were common in many areas of peak home-building activity. As long as Congress imposes a ceiling on FHA and VA rates, increasing the discount is the only way that builders can attract mortgage money.

The drop in prices of FHA mortgages coincided with a steep drop in the prices of Treasury bonds, which last month hit the lowest levels in a quarter of a century. One Treasury issue was yielding nearly 4½ per cent at mid-May, well above the yield on many common stocks. This puts further pressure on the Treasury, which has a 4¼ per cent ceiling on new issues, and has been forced to resort entirely to short-term issues to get new money to refund existing debt.

Another manifestation of tighter money showed up last month in the municipal bond market when the New York State Thruway Authority rejected as too costly a bid of 4.3 per cent for a revenue bond issue—the first time the Thruway Authority had rejected a bid since November 1957. And corporate borrowers were paying more, too, as New York banks upped their prime lending rate from 4 per cent to 4½ per cent.

Interest rates on commercial property loans so far have not risen so fast as rates on home loans, but the National Association of Real Estate Boards has indicated that commercial rates are heading higher. In its first-quarter survey of commercial interest rates, NAREB noted: "In many areas, a strong demand from borrowers seeking loans on buildings in select locations has made it increasingly difficult to attract investment to less desirably situated structures." While ample funds were reported at rates of between 5¼ and 5½ per cent for loans on commercial and industrial properties in prime locations, some shortage of funds showed up for less attractive properties, and rates ranged as much as 1 per cent higher, a broader spread than prevailed at the end of last year.

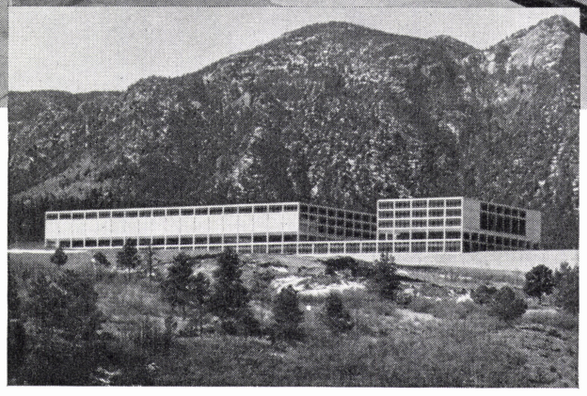
Briefs

Wright's Imperial Hotel in Tokyo, survivor of earthquakes, may not survive immutable economics. Only a few weeks after Wright's death, the Imperial's manager called the 37-year-old hotel "uneconomical and not so safe as it used to be," and said it might be replaced before the 1964 Olympics, if they are held in Tokyo. The corporation that owns the Imperial is impressed by the fact that guests prefer to stay in the new annex rather than in the old part of the hotel. Maintenance has become a problem, and foundations have been damaged by water seepage. One hotel official says apologetically, "You can't stop progress."

Montreal became the hub of a watered-down metropolitan government system last month with passage of a bill setting up a Metropolitan Montreal Corp. Only 14 suburbs, instead of 46 as originally planned, are included, and the corporation's powers are restricted to coordination and planning.

U. S. EMBASSY IN LONDON

Eero Saarinen's impressive London Embassy, which won out over seven other designs invited by the State Department in 1956, will be finished in December. The new Embassy, covering the north side of Grosvenor Square, is of Portland stone, six stories high, to harmonize with the rest of the Square.



One of three auditoriums showing riser and floor type installation of Heywood-Wakefield chairs. A total of 1,750 were used in the three halls.

Heywood-Wakefield Seating meets rigid Entrance Requirements of the United States Air Force Academy

Recommended by well-known Industrial Designers, Walter Dorwin Teague Associates, Heywood-Wakefield seating was chosen for its proven construction quality, price, long-run economy and functional beauty. Auditorium chairs, both tablet arm and standard models, were installed in three auditoriums. Upholstered in 100% flat weave nylon, the chairs feature latex foam rubber padded backs with aluminum protective edge and coil spring cushions with foam rubber toppers.

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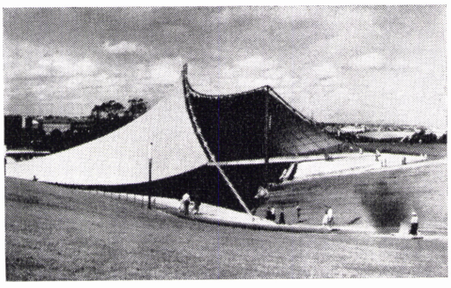
Australian architects win $25,000 Reynolds award; Architect of the Capitol Stewart's $25 million headache



AWARD WINNER

For the third straight year, the $25,000 Reynolds Award for a "significant work of architecture in the creation of which aluminum has been an important contributing factor" went to a foreign architectural firm. The 1959 winners are Melbourne, Australia's **Yuncken, Freeman Brothers, Griffiths & Simpson** for a sweeping, tent-like music bowl (picture, left) in Melbourne. (Last year, a group of Belgian architects won the award for the Transportation Pavilion at the Brussels Fair, and in 1957, the first year of the award, a Spanish firm won it for a lounge building at an automobile factory in Barcelona.) **Barry B. Patten** of the Melbourne firm was most responsible for the design.

The music bowl (FORUM, May '59) is an arc of aluminum-covered plywood strung on steel cables and supported by two steel masts. It covers roughly an acre of land, allowing room for a full orchestra and about 2,100 persons seated in the sloping area beneath the tent, and it is built into a slope that allows another 20,000 persons to see and hear the orchestra. Called the Sidney Myer Music Bowl, the structure cost $448,000.

This year's Reynolds award jury consisted of John Noble Richards, president of the AIA, and Architects William Caudill,

JURY AT WORK:

Caudill, Richards, Alexander, Saarinen, Contreras.

Robert Alexander, Eero Saarinen, and Carlos Contreras of Mexico City. The award, which includes an original sculpture by Seymour Lipton, will be presented at the AIA convention later this month.

CAPITOL ARCHITECT UNDER FIRE

One of the most talked about buildings in the U.S. today is the massive new $25 million Senate Office Building. Since it was opened several months ago, its new tenants have shown little reticence in criticizing certain elements in its operation. Examples:

- The subway does not terminate where it was supposed to—under the Capitol—but ends short across the street from it. It will cost another $4 million to carry the Senators into the Capitol, a prerogative that Representatives do not enjoy.
- Ramps to the Senators' basement parking garage were banked so steeply that new cars scraped their rear ends. This has been remedied with some additional asphalt.
- The mail chutes got clogged, spilled mail into the cafeteria kitchen. For another $70,000 this problem has been licked.
- Clocks failed to keep time because their ornate bronze hands were too heavy. Hands had to be replaced by anodized aluminum.
- The louvered doors are indeed handsome, but Senators can be overheard through the louvers, so the doors are being soundproofed.
- The biggest hassle so far has been about $100,000 in special vinyl rubber tile on the office floors. After many Senators complained that the floors were slippery and a menace to their secretarial staffs, most of the offices are being carpeted (at an additional cost of $150,000) over the tile. (This will involve removing the louvered doors and shaving several inches from them to clear the carpeting.) A few Senators, who scoffed at their colleagues as "carpet-backers," refused to cover their tile, preferred to try nonskid floor wax instead.

The man who has had to listen most diligently to these complaints is a former Congressman from Delaware, **J. (for John) George Stewart**, who has the title Architect of the Capitol, although he is no architect but a civil engineer.

HARRIS & EWING

Stewart, who has held the job since 1954, has been overseer of the most ambitious Capitol Hill building plans in history. Besides the new Senate Office Building, there is the third House Office Building and the increasingly expensive extension of the East Front of the Capitol itself (starting from Stewart's original estimate of $17 million, this has become a $21 million job). Stewart, who actually is little more than a liaison man between Congress and the various builders and architects, has come under fire particularly from Senator Paul Douglas (D, Ill.) who has intro-

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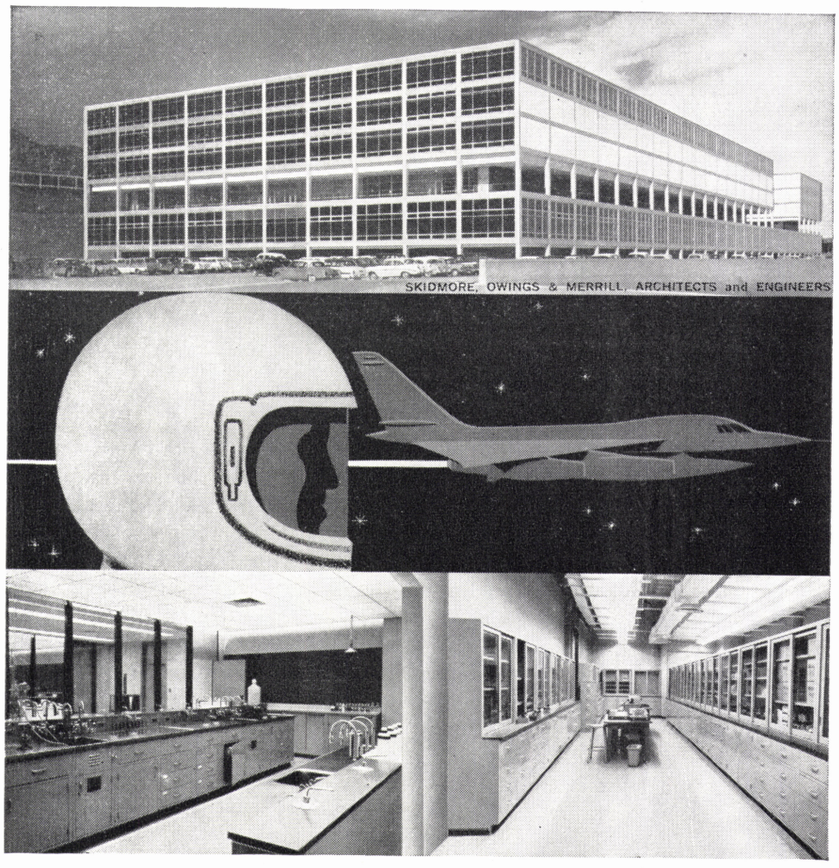

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duced a bill that would make Congress, rather than the President, responsible for appointing the Architect of the Capitol, and would require that their appointee be an architect. (This would, indeed, be a novelty, as only one Architect of the Capitol—Thomas U. Walter, who served from 1851-1865—has ever been an architect.) Douglas has been gunning for Stewart ever since the two battled over the controversial extension of the Capitol's East Front. Meanwhile, Stewart is scurrying about, trying to mollify Senators who continue to find new faults in their new offices, and looking apprehensively at the excavation for the third House Office Building.

NEW YORK SNUBS CHALK TALK

Oscar Roy Chalk is a 51-year-old real estate man who has also enjoyed singular success in several transportation ventures—notably an airline (Trans Caribbean Airways) and a surface transit system (Washington's D.C. Transit). In April, Chalk made a rather astonishing effort to enlarge his interest in urban transit by offering to purchase the biggest publicly owned transit system in the nation—New York City's subway and bus system.

It is a tribute to Chalk's own record as an entrepreneur as well as a measure of how big a headache New York's debt-ridden subway system is that the city spent four

WALTER DARAN

CHALK

weeks mulling over Chalk's proposition before turning it down. Chalk offered the city a total of $615 million for the system (which cost $2 billion over many years, and would cost about $6 billion at today's prices), with a cash down payment of only $110 million. The city would still have to pay off $1.1 billion of outstanding debt, and Chalk would be allowed to sell off any part of the system (e.g., the three power plants which the Consolidated Edison Co. last month bought for $126 million). The most politically unpalatable term in Chalk's offer, however, was his plan to hike fares from 15¢ to 20¢, and probably later to 25¢, to guarantee a net return of 6½ per cent. The Mayor's transit committee turned down the offer, saying it had a "fairyland quality unrelated to the realities of transit."

There is something of a fairyland quality in the story of Chalk's rise from the son of a Bronx tailor to the holder of over $10

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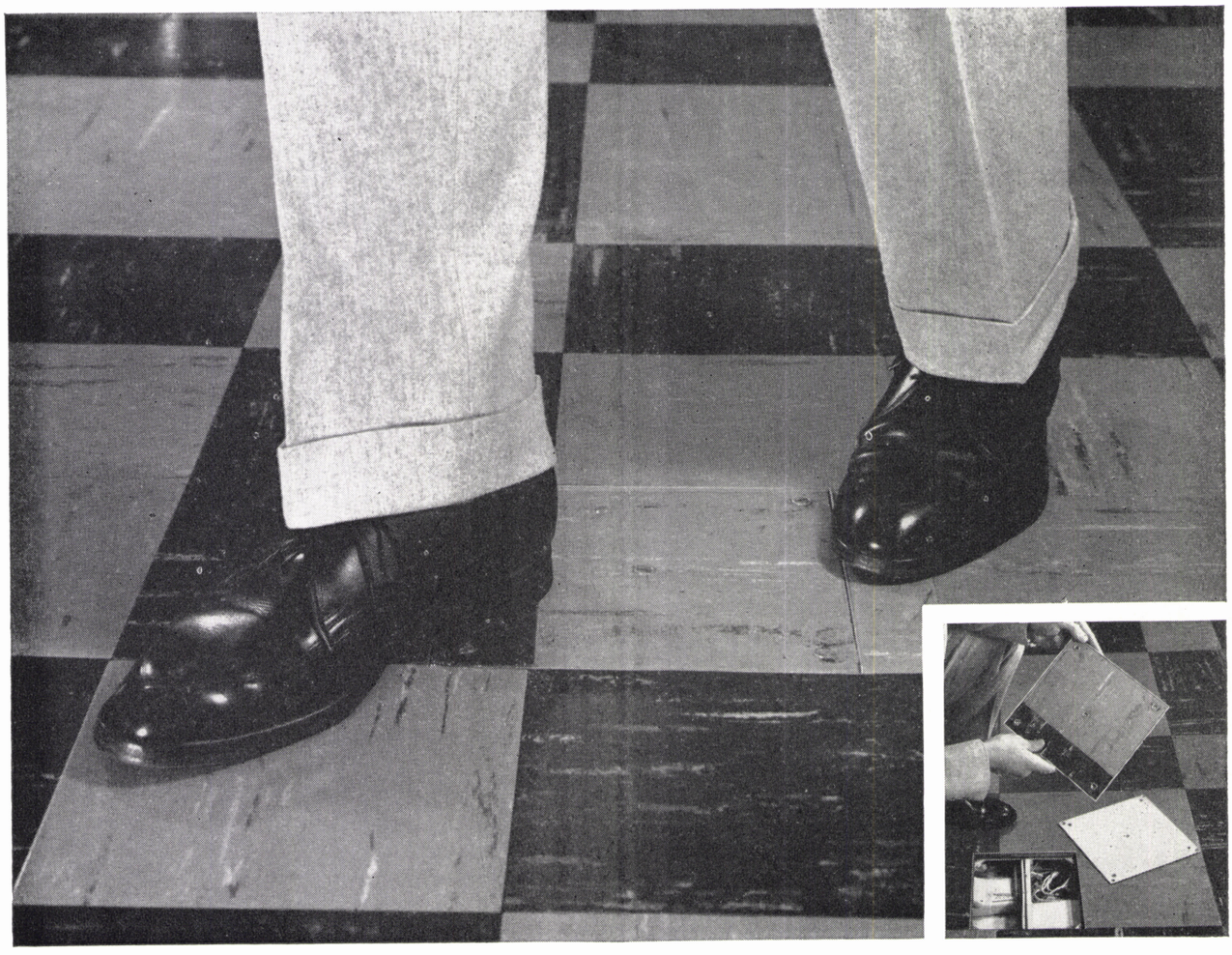

Puzzle: Find the Spang Floor Pan! In this unretouched close-up photo, it's barely visible between the man's feet. From a few feet away, it's difficult to spot this access-box covering. Only 1/16" rim and corner and center screws are visible.

(Right inset) Linoleum tile is easily and accurately cut to fit recess in this square Spang Floor Pan design. Center and corner screws hold floor pan and access box plate firmly in place. Square access box provides maximum working area.

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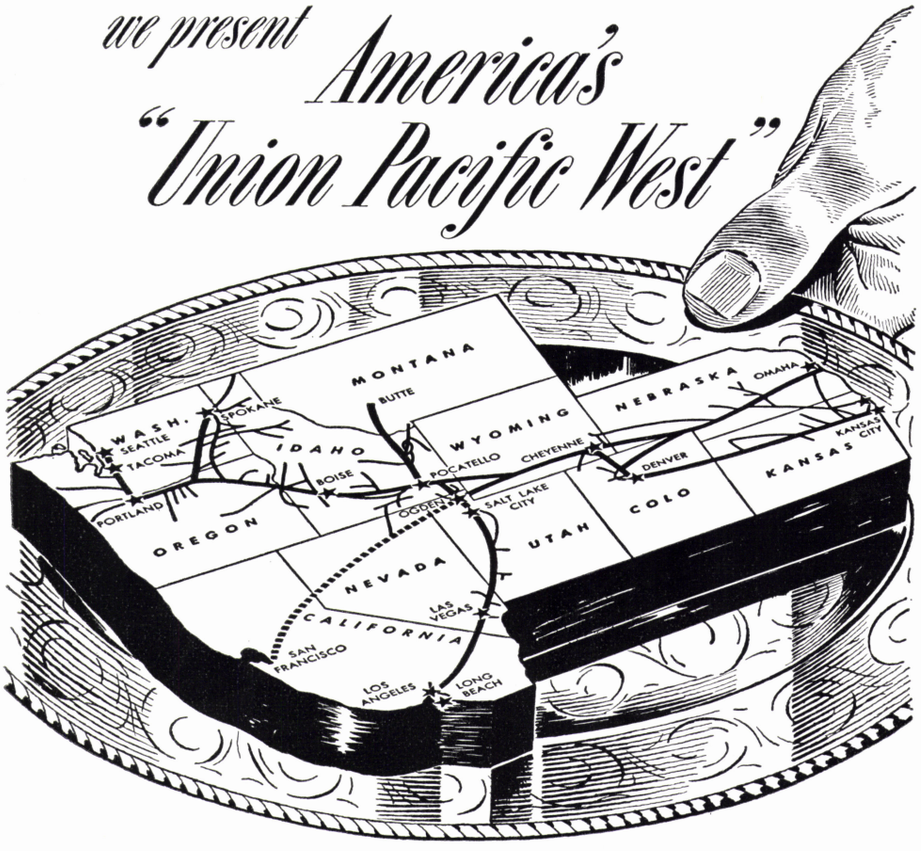

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million in Manhattan luxury apartments, and principal stockholder in Trans Carib, which in turn controls D.C. Transit. But Chalk, who is an inveterate gambler (craps and *chemin de fer* are his favorites), has proved that he has a rather sure grasp of the "realities of transit." He bought D.C. Transit from Louis Wolfson, who has something of a reputation as a shrewd entrepreneur himself, for $13.5 million, only $500,000 of which was his own money. The company had a book value of $27 million, but had performed poorly under Wolfson, and was suffering from a long strike. Since he bought it, Chalk has paid off a $9 million loan (and paid it three years early to boot), and is socking away as much in net earnings per year as he originally put up in cash for the company.

IS RENEWAL GOOD POLITICS?

Politicians have typically approached urban renewal with caution. However, a few mayors and other elected officials have come out firmly for renewal, and found that it has been the sturdiest plank in their political platforms. Last month there were several pertinent incidents involving politicos who have found renewal a political weapon —although, as one mayor found, not always to the exclusion of other considerations.

In Chicago, for instance, Mayor **Richard J. Daley** was re-elected on a platform that was devoted to "remaking the city."

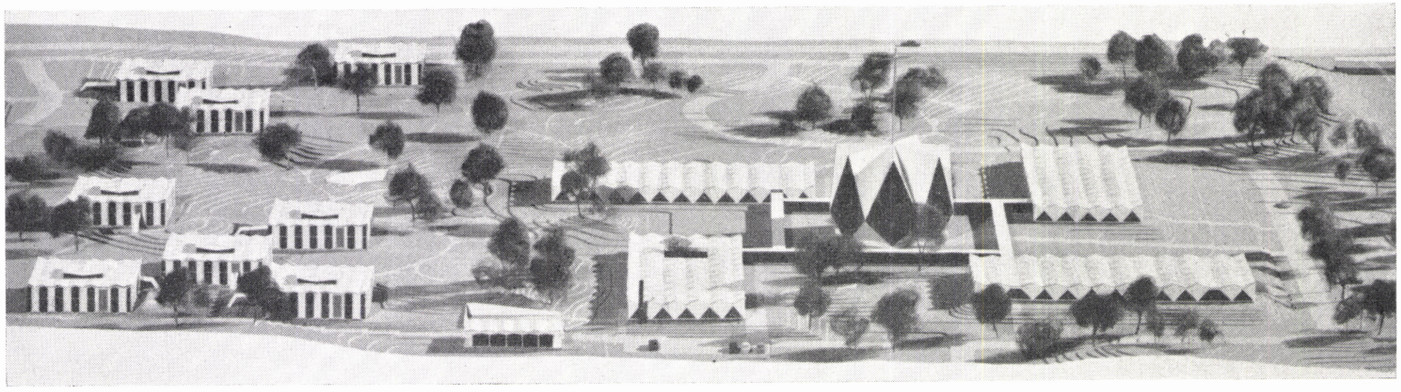
In Camden, N.J., the local Democratic machine headed by Mayor **George E. Brunner** lost four out of five seats on the City Commission—and thereby lost effective control of the city. The opposition won election on a "save our city" ticket, making effective use of the fact that the city's population was declining and that the city had only one urban renewal project.

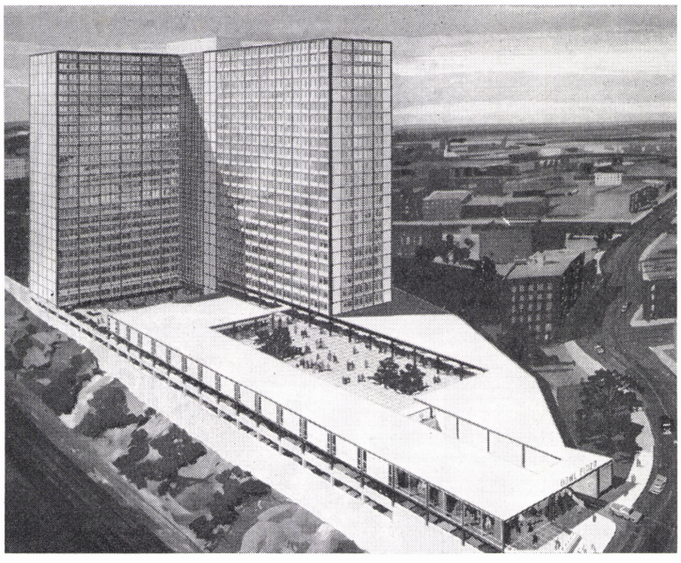
In Baltimore, however, Mayor **Thomas D'Alesandro Jr.** found that ardent support of a vast renewal effort is not necessarily enough to assure re-election. D'Alesandro, who is well known as a leading advocate of the city's massive renewal program, was defeated in the Democratic primary for mayor by a relative unknown, **J. Harold Grady**, who went on to win the election for mayor. D'Alesandro's defeat in the primary resulted largely from a revolt of Democrats who were swayed by arguments that the mayor's machine was corrupt. END

F. DI GENNARO

LOSER D'ALESANDRO

A roundup of recent and significant proposals



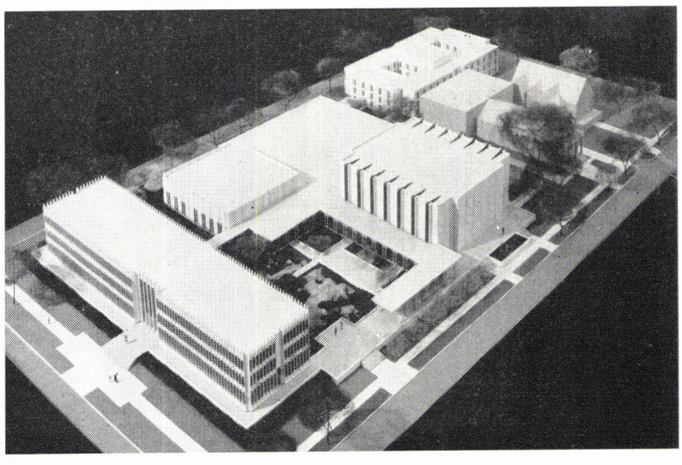


N. J. HOUSING-RETAIL CENTER

Twin, glass-sided, 23-story apartment towers and a 70,000 sq. ft., single-story shopping center with a two-story underground parking garage for 400 cars, will be started this month in downtown Jersey City. The project will be the tallest silhouette on the New Jersey side of the Hudson River. It is the design of Charles Shilowitz of Jersey City and Raymond & Rado of Manhattan and is being privately financed by Michael Portnow, a New Jersey business executive, and Howard Laden, local realtor-developer. Cost: $7.5 million. It will be ready for occupancy by January 1961, with apartments renting for $40 to $45 per room.

MODERN BIBLE SCHOOL FOR MINNEAPOLIS

The 13-building campus pictured above is the new Lutheran Bible Institute of Minneapolis, an 800-student school for lay church workers to be built on a 30-acre tract in suburban Golden Valley, Minn. The project will consist of eight two-story dormitories (left), each housing 66 students, and a seven-sided, 800-seat chapel (right) surrounded by four academic buildings, the walls of which will be composed of precast concrete, structural gable panels. (The other buildings will also be constructed of precast panels.) Designed by St. Paul Architects Hammel & Green, the campus will be built in stages starting this September. Completed, it will cost about $3.5 million.



MUSIC CONSERVATORY FOR OBERLIN COLLEGE

Oberlin College in Ohio is currently campaigning for funds to build an elegant new $3.5 million music conservatory designed by Detroit Architect Minoru Yamasaki. Shown above, the plan includes a three-story classroom and administration building (lower left), a 563-seat concert hall (middle right), a library and rehearsal building (middle left), and a three-story practice-room building (upper left). The entire complex, to contain 104,000 sq. ft., will be used by roughly 500 students. It will be of white precast concrete and glass and will face on the college's 13-acre midtown square. Scheduled completion date: 1961.

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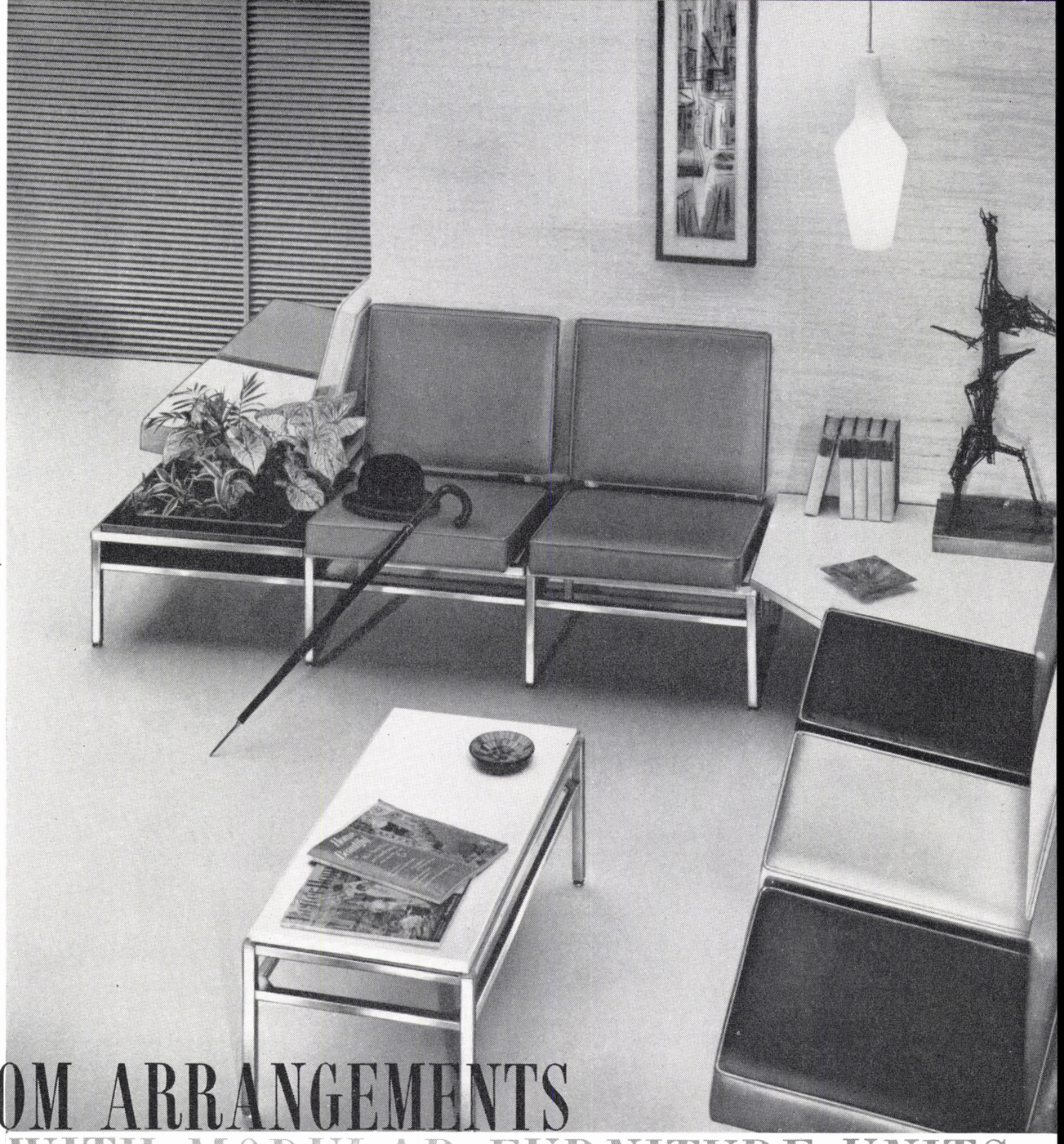

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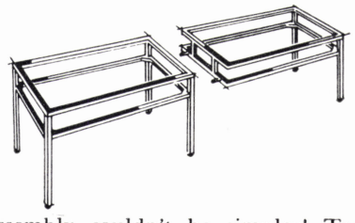
VISCOUNT offers you more than 50 exciting new upholstery patterns and colors . . . from durable, wipe-clean materials to luxurious deep-textured fabrics. Impervious Royaloid table tops are available in 20 colors, patterns and finishes – from rich wood-grains and marbles to soft decorator pastels. And, one-piece leg-frames are of square-tube Satin Chrome finish.

Write for Royal VISCOUNT brochure 9026 for details
ROYAL METAL MANUFACTURING COMPANY
One Park Avenue, New York 16, Dept. 39-F

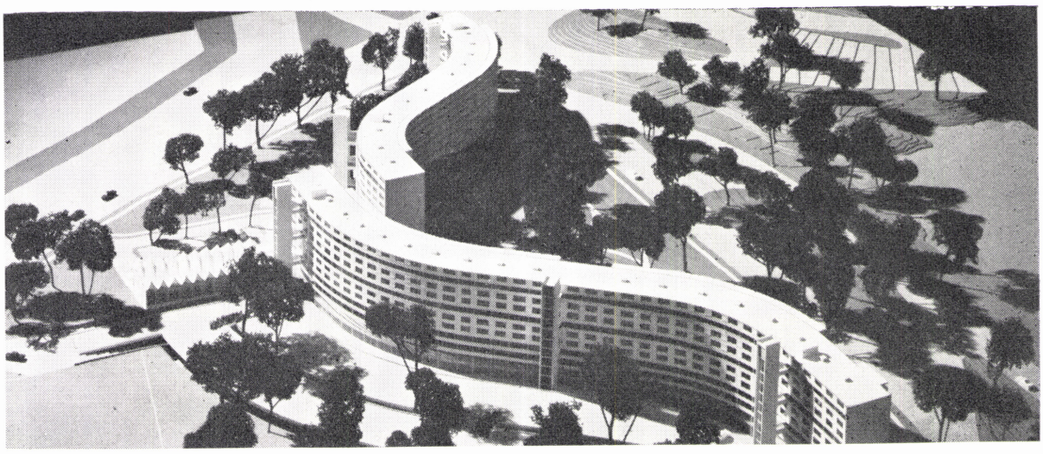


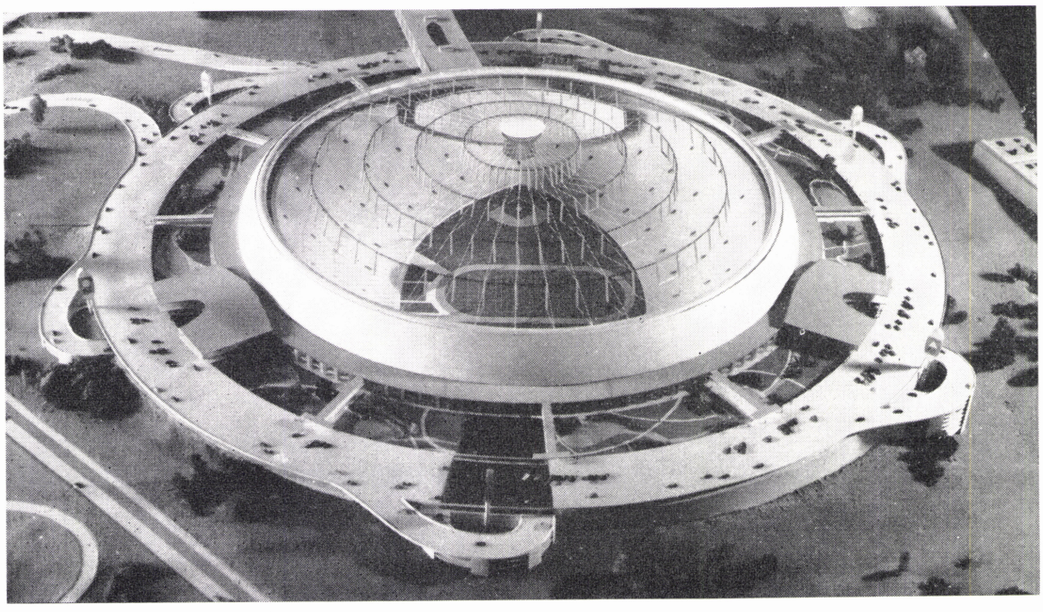
Assembly couldn't be simpler! Two hidden bolts join starter and add-on frames into rigid, unified ensembles. Seat-and-back sections clamp to frame at front and back. Table-tops and seats . . . can be interchanged in seconds . . . or frame assembly rearranged at will. Free-standing units for occasional chairs, tables, ottomans.

Royal® VISCOUNT MODULAR FURNITURE

BROOKLINE APARTMENTS

Hugh Stubbins & Associates of Cambridge, Mass. have designed this $10 million urban redevelopment apartment project for nearby Brookline. The two long, curved buildings, containing 652 apartments, would have a gross floor area of 502,100 sq. ft. Ten stories tall, they would be faced with glass and brick and would be surrounded by a landscaped park. The project has yet to be approved by the Brookline urban redevelopment authority and the federal government.



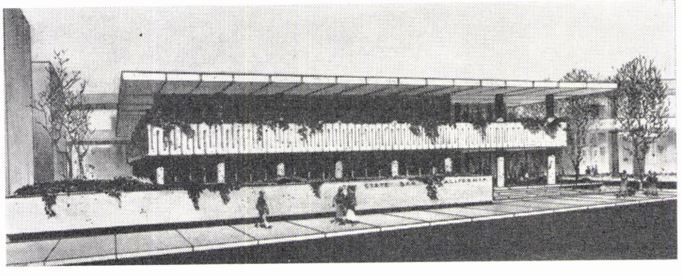


ST. LOUIS CIVIC ARENA

If nothing else, big events at the proposed St. Louis Metro should be really big. Shown at left, this $87-million sports-and-shopping center is the design of Architects Schmidt & Black. The proposed stadium would have seating for more than 100,000 and a playing field in excess of ten acres. Around the seating area it would have over 1 million sq. ft. of business space, and elevators would take customers to and from a vast eight-level underground parking area. The project's most appetizing feature is a five-level restaurant at the crown of the cable-supported plastic dome. First big event hoped for by its promoters: the 1964 Olympics.

STATE BAR HEADQUARTERS FOR SAN FRANCISCO

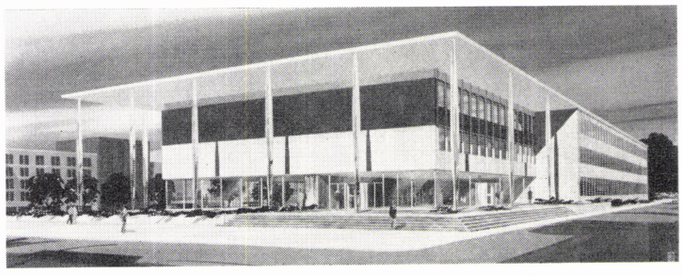
In San Francisco, the California State Bar and State Bar Examiners (active members: about 19,000) will build this two-story building to house its upstate offices. To be started this month in the city's civic center, the precast concrete structure is expected to cost just over $500,000 (including furnishings). Approximate total floor space: 11,600 sq. ft. The design is by the local firm of Hertzka & Knowles. Completion is scheduled for early spring, 1960.



STATE OFFICE BUILDING FOR INDIANAPOLIS

Six small to medium-sized architectural firms forming the Associated Indiana Architects designed this $2 million Employment Security Building to be built by the state of Indiana across the street from the capitol in Indianapolis. Now under construction, the three-story structure will provide a little more than 100,000 sq. ft. of floor space for some 400 state employees. It will be faced, appropriately, with Indiana limestone while its ten tapered columns will be sheathed with stainless steel and ceramic tile. Completion date: 1961.

continued on page 57

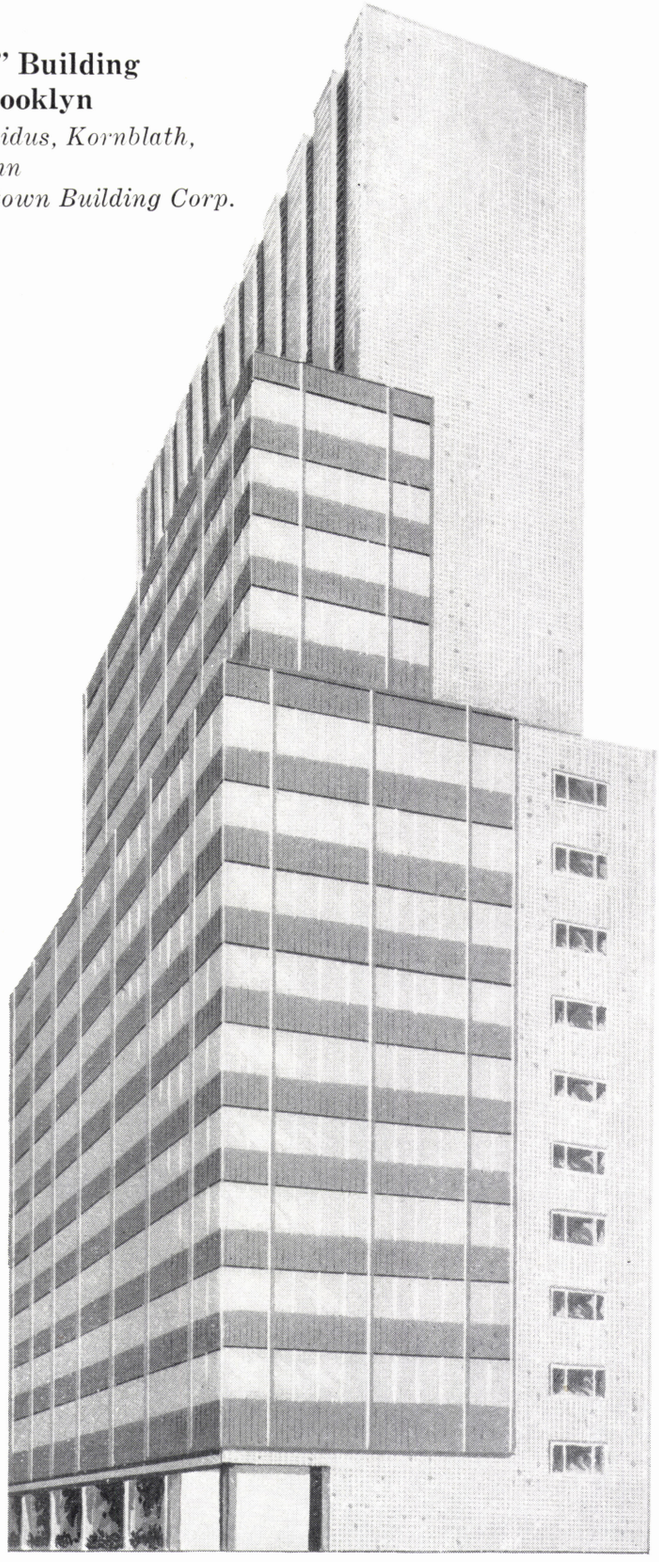


DRAMATIC EXTERIORS

IN LIVING COLOR...

Capri TEXTURED Mosaic Tile brings new vitality to monumental exteriors...

"America Fore" Building
Downtown Brooklyn
Architects—Lapidus, Kornblath, Harle & Leibmann
Builder—Brooktown Building Corp.



Brooklyn's new 15-story "America Fore" Building presents a strikingly dramatic exterior—highlighted with Capri Mosaic Tile.

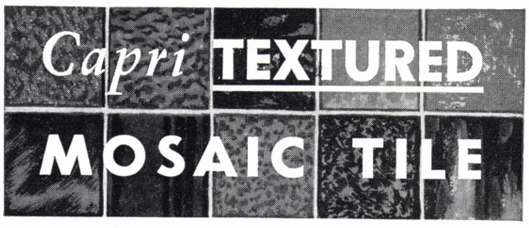
"We integrated color, texture and design in a monumental exterior," says architect Leo Kornblath. "Our objective was a treatment that would be both distinctive and completely maintenance-free."

"Mosaic tile was incorporated in our plans because it provides a dramatic combination of color and texture, at competitive cost."

Capri Ceramic Mosaic Tiles give you an unlimited range of color, add new dimensions to exterior design. They are completely resistant to fading, crazing and thermal shock, as well as freezing and thawing. They are easy to maintain, and economical to install.

FOR INTERIORS—permanently beautiful Capri Mosaics add sales appeal to kitchens and bathrooms, enhance building lobbies and store interiors.

For further information, see Sweet's Architectural 13c/San.



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Please send me Capri Tile Specification Sheet and Tile Sample Chart.

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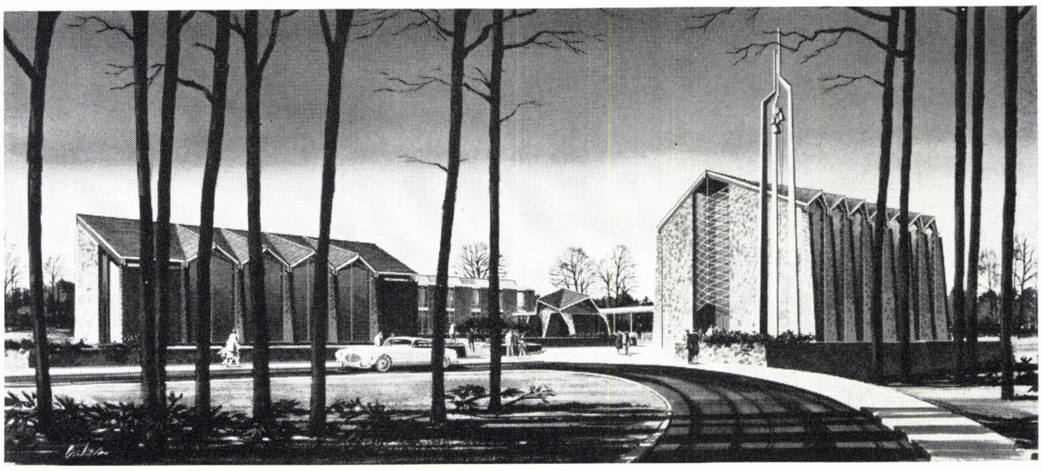
(Please clip this to your letterhead)

STANDARD TILE COMPANY, Inc.

854 Rockaway Ave., Brooklyn 12, N. Y.

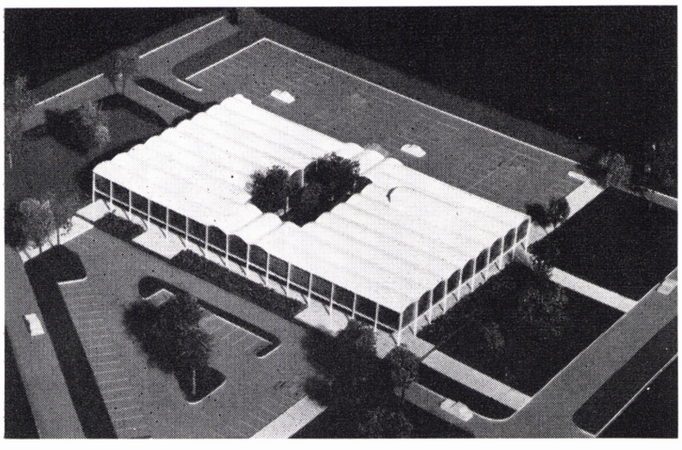
PENNSYLVANIA CHURCH

Four buildings grouped around a central courtyard and linked by open and covered passageways will comprise the new Gloria Dei Evangelical Lutheran Church (right) to be built on a five-acre site just outside Philadelphia in Bethayres, Pa. The two main buildings in the project, the fellowship hall and sanctuary, will have native fieldstone walls and floor-to-ceiling tinted-glass windows crowned by undulating gable roofs. The architect is Vincent G. Kling. Cost: $210,000.



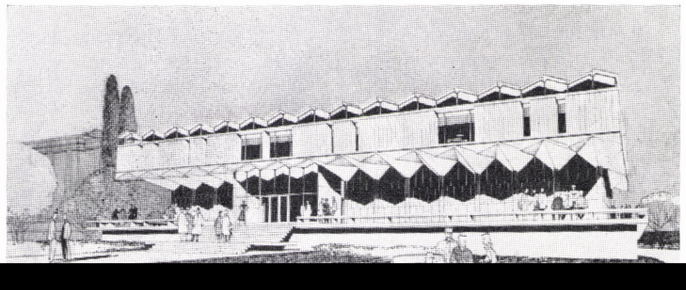
SMALL PSYCHIATRIC HOSPITAL FOR HOUSTON

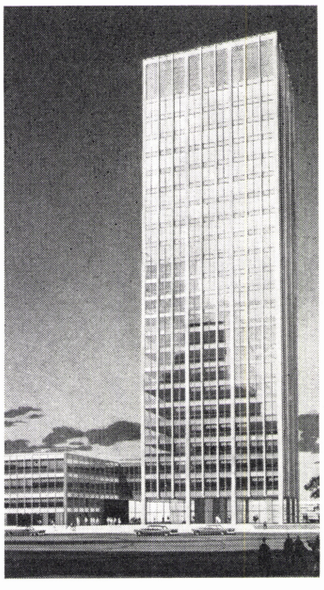
At Texas Medical Center in the south end of Houston, the state will erect a two-story, 60-bed mental hospital called the Institute for Psychiatric Research and Education. To provide patients and hospital staffers with ample protection against Texas sun, the two-story building has been designed with its first floor tucked back 12 ft. under the second floor and the second floor shielded on all sides by a white tile screen. The roof will be made up of white concrete vaults 3 in. thick. To be started the first of next month, the project will be completed in about a year. It will cost about $1.5 million. Architects: Pierce & Pierce of Houston.



WASHINGTON UNIVERSITY ART AND ARCHAEOLOGY CENTER

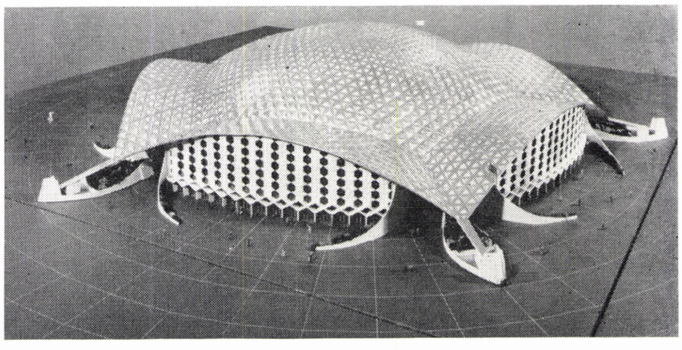
At Washington University in St. Louis, construction has started on the Mark C. Steinberg Hall of Art and Archaeology. The two-story structure, which will have a 4½-in.-thick folded-plate concrete roof, will contain an exhibition gallery, a 340-seat auditorium, and a library, as well as faculty offices and classrooms. Designer is Fumihiko Maki, assistant professor of architecture at the university. Architects: Russell, Mullgardt, Schwarz & Van Hoefen. Cost: $650,000.





LOS ANGELES OFFICE TOWER

In midtown Los Angeles, construction has begun on Pacific Tower, a 28-story steel-and-glass sheath which, when completed late in 1960, will be one of the city's tallest buildings. Plans by Charles Luckman & Associates include a restaurant, an executive club, a gymnasium, roof garden, and parking space for 500 cars. Financiers for the project are Atlas Terminals Inc. of New York City and the Diners Club. The building's four-story annex (at left in photo) will be used by the Diners Club for its West Coast headquarters. The project will cost approximately $9.2 million.



GIANT ARENA FOR OKLAHOMA CITY

R. Buckminster Fuller's geodesic dome principle has been adapted by Architects Bailey, Bozalis, Dickinson & Roloff for their proposed $4.5 million arena for Oklahoma City (above). If approved by city officials, it will provide a 140 ft. by 260 ft. arena floor and seating for 15,000. Construction: a framework of aluminum tubing, 3 to 8 in. in diameter, supporting large hexagonal aluminum panels. The over-all surface area of the central dome and the five saddle-shaped canopies would be 200,000 sq. ft.

continued on page 58

Wasco Showerwall is more than a tub enclosure. It's the way to achieve a spacious look, add beauty, and reduce maintenance problems. Only Showerwall does all this.

Showerwall panels are solid, cast acrylic—with embedded foliage and fine fabrics—truly luxurious. They are shatterproof, draft-free, and easy to clean. Also available in Shower Doors. Write for full-color brochure showing the variety of patterns.

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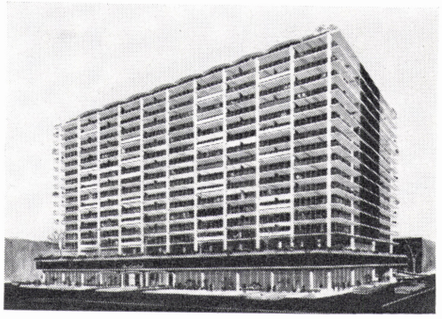
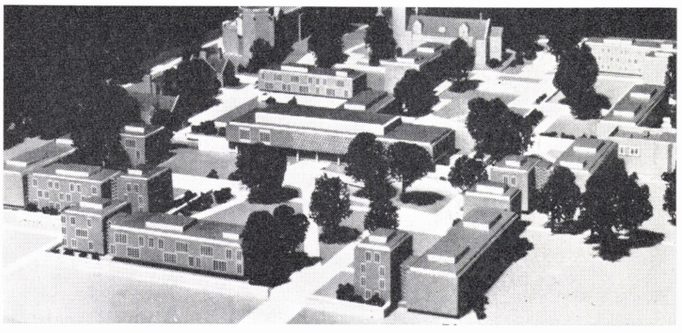


CO-OP APARTMENT HOUSE FOR SAN FRANCISCO

The Comstock (pictured above) will be the largest cooperative apartment development west of Chicago. To be built soon on the crest of Nob Hill in San Francisco, the building will have 13 floors, plus a penthouse, and a total of 891 rooms (127 apartment units). It is scheduled for completion by November 1960 and will cost about $6.5 million. The architects are Hannarberg & Herman of San Francisco.

FEDERAL OFFICE BUILDING FOR ST. LOUIS

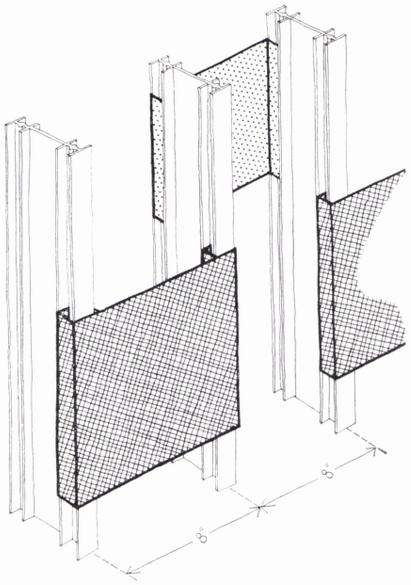
On Market St. in St. Louis, next to the Kiel Auditorium (left in the rendering above), a four-story federal office building will be built at a cost of about $14 million. Total floor space: 485,000 sq. ft. The building's top three floors will be extended out over the first floor to provide a covered walkway at street level. Exterior walls will be faced with brick up to the second floor, with limestone above. The St. Louis firms of William B. Ittner Inc. and Murphy & Mackey are architects for the project. Completion date: 1961.

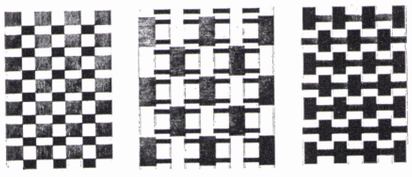


NEW HOUSING FOR 500 PRINCETONIANS

At Princeton University, where some 2,900 undergraduates occupy dormitory space designed for 2,400, a $4-million dormitory quadrangle will be built to relieve the overcrowding. The buildings will be low (not over three stories), flat topped, and sheathed with materials similar to those on the façades of the surrounding campus: local stone, brick, and limestone. The project's first phase, five dormitories and a social center, will be completed by 1960. More dormitories will be built later. Architects: Sherwood, Mills & Smith. END

Precut aluminum panels . . . refrigerator-type hardware . . . acoustical glass-fiber ceiling . . . light-control system





PRECUT SCREEN SYSTEM
designed for concealing old facades

The sketches at left are of a complete new sun-screening and decorative wall system now being marketed by the Aluminum Company of America as an inexpensive way to cover up the face of old buildings. Called *Sol-Dec*, the system can also be used for decorative panels in new buildings—or as an overlay for cooling towers, elevator penthouses, ceilings, lobby walls, or for patio or plaza screens.

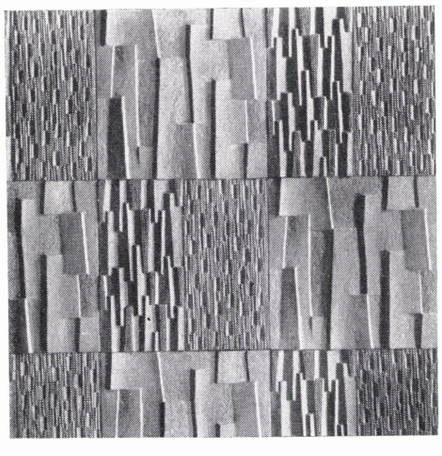
The system is composed of only three extrusions: a clip angle, a miniature I-beam, and a grille panelette. All parts are precut. The I-beams are attached to the building façade on an 8 ft. module; panelettes are then snapped on the I-beams and locked in place with a pair of pliers. The I-beams and the clip angles are natural aluminum; the panelettes have a colored baked enamel finish or can be ordered with custom finishes. Eleven standard patterns (three are pictured here) are available at a cost of $2 to $4 per sq. ft.

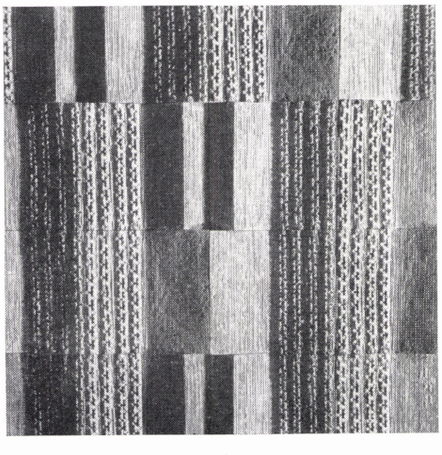
Manufacturer: Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.

CERAMIC WALL TILES
have sculptured, handmade look

The photos below are of a new series of hand-pressed, sculptured ceramic tiles being sold as a decorative facing for interior and exterior wall surfaces. The tiles in the photo at left are a foot square and sell for $5 to $7.50 per tile. Those in the photo at right measure 6 by 12 in. and sell for $4.50 to $6.25 per sq. ft. Both styles are available with a matte or glossy finish and in any color.

Manufacturer: Design-Technics, 4 E. 52nd St., New York 22, N. Y.

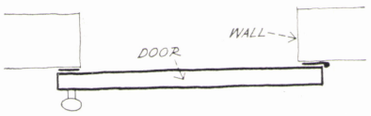




LATCH-TYPE HARDWARE
cuts door installation costs

The Stanley Works has developed new door hardware which simplifies the installation of interior doors. The hardware, called *Surfaset*, is intended primarily for the home, but may be suitable for many types of school, hospital, or office applications.

Its main features are surface-mounted hinges and a refrigerator-type door latch. Thus the door, as on a refrigerator, overlaps the opening, so that it need not be precisely fitted. Another advantage gained is that the problem of doors swelling in



hot, humid weather is eliminated. Since the contractor does not have to cut, miter, and install wood jams, trim, and stops, and has only one simple mortise in which to install the lock, labor costs can be reduced from $3 to $15 per opening. The company claims that an overlapping door can be hung in less than 30 minutes as against an over-all two to three hours for a conventional door.

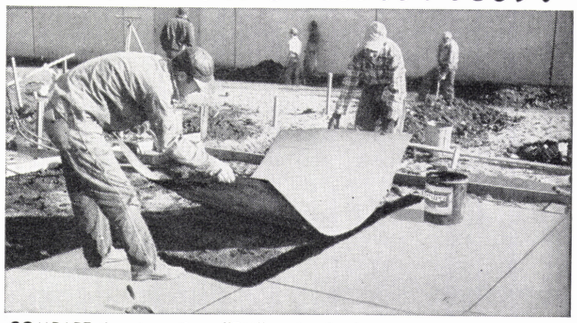
Obviously, this system in its present form would not do wherever locked doors or swinging doors are required for security or safety reasons. But it could be used for office doors hung on interior partitions, for school or office closets, and for other lightweight closures where locking or two-way opening is not a necessity. Hardware cost for one door: $6.75 to $9.95.

Manufacturer: Stanley Works, 195 Lake St., New Britain, Conn.

continued on page 62

compare *PM with any other type of vapor seal on the market!

ONLY *PM OFFERS ALL OF THE FEATURES NECESSARY TO PROVIDE A TRUE, IMPERMEABLE VAPOR SEAL AGAINST MOISTURE MIGRATION.



COMPARE the strength . . . "PM" maintains its permeance rating even after being subjected to the pouring of aggregate, trundling of wheelbarrows and installation foot traffic. Resists rupturing and tearing. How many other materials will perform like this? COMPARE the ease and speed of providing a permanent installation . . . "PM" may be laid directly over the tamped grade or fill. Ideal for all types of construction; basement, crawl-space and slab-on-grade.

We sincerely advise and invite your comparison of "PM" against all other "so called" vapor barrier products on the market . . . before you specify or install your next vapor seal be sure it meets these Sealtight standards of quality: permeance rating of only .0066 . . . resistant to rot, mold and termites . . . strong enough to resist puncturing . . . expandable . . . quickly, easily installed . . . only "PREMOULDED MEMBRANE" meets them all. "PM" is actually the most economical vapor seal on the market when you consider the reduced maintenance and redecorating costs realized through the complete elimination of moisture migration into the structure. COMPARE the permeance ratings . . . as you can see by the chart below, "PREMOULDED MEMBRANE" is over 16 times more impermeable than the next ranking material.

MATERIAL	WATER VAPOR TRANSMISSION (in *perms)
"PREMOULDED MEMBRANE"	.0066
Polyethylene Film (.004 in. thick)	.097
55 pound roll roofing	.030
Duplex paper (coated both sides reflectors material, reinforced)	.304

***PERMS**—grains per square foot per hour per inch of mercury difference in vapor pressure at standard test conditions.

SEALTIGHT®

PRODUCTS

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*Premoulded Membrane TRADEMARK ...the industry's only TRUE, impermeable vapor seal.

WRITE TODAY for complete information . . . request the "PM" Design Manual and series of "Tech-Tips."

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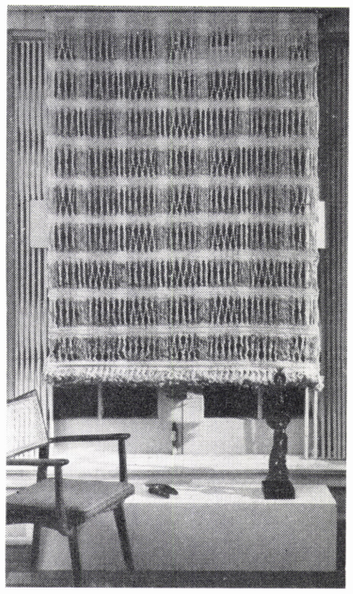


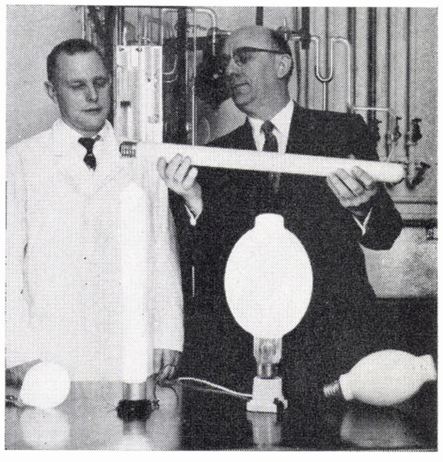
DECORATIVE ASBESTOS BLINDS are fireproof and mildewproof

In the dining room of Laurence Rockefeller's Dorado Hotel in Puerto Rico guests are shielded from the blaze of Caribbean sun by a handsome new window blind, or drape, woven of asbestos and glass-fiber yarn. The yarn, developed by Johns-Manville, is a refined version of that used for fireproof industrial clothing, electrical insulation, and theater curtains. It makes a highly decorative, fireproof, and mildewproof blind. Now available as a stock item in off-white only, the material sells for $2.65 per sq. ft. Custom weaves of the same material would cost about the same when ordered in quantity.

Manufacturer: Lozano-Fisher Studios Inc., 64 E. 55th St., New York, N. Y.

SINGLE-BASE FLUORESCENT LAMP burns in standard light socket

A development in fluorescent lighting which could radically change the design of a multitude of indoor and outdoor light fixtures has been announced by Westinghouse Electric Corp. Basically what the



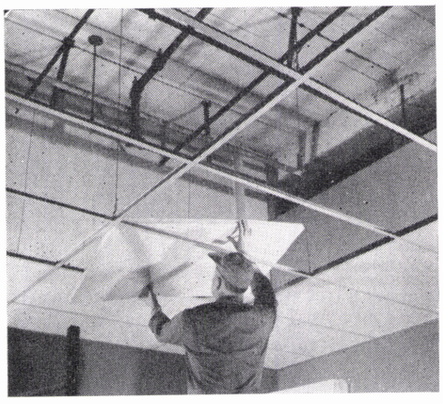
company has come up with is a fluorescent tube which can be burned in an ordinary light socket and which can be made in various decorative shapes (hence it can be a fixture as well as a light source).

Unlike conventional fluorescent lamps, the new lamps (various designs shown opposite page) have no external starter or ballast. Instead, they contain a built-in starting switch and an incandescent filament to replace the ballast (which on conventional models weighs anywhere from 11 ounces to 25 pounds). Still in the test model stages, the lamps will not be commercially available for about one year.

Manufacturer: Westinghouse Electric Corp., Lamp Div., Bloomfield, N. J.

GLASS-FIBER CEILING
cuts room noise up to 90 per cent

Johns-Manville is now marketing an acoustical ceiling system made up of 2 by 2 ft. or 2 by 4 ft. glass-fiber panels mounted



in a simple suspended grid frame. Light in weight (only 0.20 pounds per sq. ft.) and flexible enough to be bent for easy installation, the 1¼-in. thick panels are said to reduce room noise as much as 90 per cent. Cost: 40¢ to 50¢ per sq. ft. installed, including the suspension framework.

Manufacturer: Johns-Manville, 22 E. 40th St., New York, N. Y.

COLORED VINYL RUG
is waterproof and weatherproof

A colored vinyl carpet, which looks and feels much like a pile rug and can be used outdoors as well as in, has been introduced by U. S. Rubber Co. Weatherproof, waterproof, and mildewproof, *U.S. Royal Carpet* is especially suited for use around swimming pools, in bathrooms or showers, or on porches and patios. It can be cut without unraveling, and no underpadding is needed to prevent skidding. Not to be commercially available until later this year, the product will be marketed in seven colors, in rolls 36 and 54 in. wide. It will sell for $5.95 a sq. yd.

Manufacturer: U. S. Rubber Co., 1230 Ave. of The Americas, New York, N. Y.

continued on page 64

STAINLESS COSTS LESS THAN ALUMINUM—

Do you know that the square-foot cost of stainless steel sheet for curtain wall panels is usually equal to or lower than aluminum when compared in thicknesses of equal indentation resistance? For example, Type 302 stainless steel, .022″ thick is equal to .051″ aluminum and costs only 62¢ per sq. ft., as compared to 67¢ per sq. ft. for 3003-H14 anodized aluminum.

Washington Steel Corporation
WASHINGTON, PENNSYLVANIA

For additional information on all gauges, fill in and mail the coupon.

MAIL COUPON *Today!*

WASHINGTON STEEL CORPORATION
6-K Woodland Avenue, Washington, Pa.

Gentlemen:
Please send me full information on comparative costs of stainless steel vs. aluminum for curtain wall panels.

Name_____
Position_____
Company_____
Street_____
City_____ Zone____ State_____

FIRE-RETARDANT PAINT
applies and looks like ordinary paint

The DuPont Co.'s new fire-retardant paint, unlike most other types on the market, looks and wears remarkably like ordinary interior paints. Priced at $9.60 per gallon, approximately 25 per cent higher than standard paints, it also differs from other fire-retardant coatings in that it does not foam under heat to form a spongy insulating layer. Instead, a specially formulated, chlorine-saturated resin in the pigmentation checks the spread of flame. Recommended for interior use only, the paint is available in seven pastel shades and white and can be applied over wood, steel, plaster, composition boards, and old paint.

Manufacturer: E. I. DuPont de Nemours & Co., 6529 Nemours Bldg., Wilmington 98, Del.

WATER-THINNED STONE CLEANER
changes color after cleaning

Stone Klene, a new product recently put on sale by the Vermont Marble Co., was developed for cleaning exterior marble, granite, slate, or other types of building stone. Packaged dry, it is a gray powder which, when mixed with cold water, turns purple. Applied to the wet stone face of a building, this purple paste turns yellow once the chemical cleaning action is completed. The paste is then rinsed off. Ten pounds of *Stone Klene* sells for about $10.

Manufacturer: Vermont Marble Co., Proctor, Vt.

LIGHT CONTROL SYSTEM
has wall-mounted "lumistat"

A new electric light-control system on the market this month measures daylight in a room and raises or dims the lights to keep illumination constant at any preset level. Unlike other light-measuring systems available, the *Luxtrol* system includes a "lumistat" which the user sets for the exact number of foot-candles required—the same way that a thermostat is set for heat control. A photoelectric scanner is mounted at a place within the room where it can best monitor the level of combined daylight and artificial light. If its reading differs with the "lumistat" setting, signals are sent to motor-driven light regulators, which then automatically adjust the artificial lighting to the proper level.

Factory tests made by the manufacturer indicate that the new system could cut electricity costs as much as 50 per cent in offices, schools, plants, stores, etc., where electric lights are usually turned on in the morning and left burning all day despite the amount of natural light coming through the windows. Total cost of the new system will depend on the size of the area to be controlled, which determines the size (and cost) of regulating equipment. However,

the lumistat and photoelectric scanner by themselves cost in the neighborhood of $200.

Manufacturer: The Superior Electric Co., 83 Laurel St., Bristol, Conn.

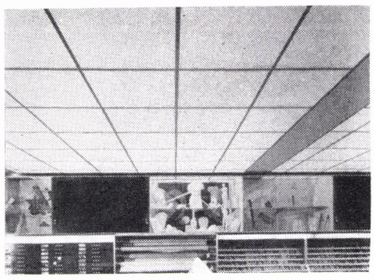
MULTIPURPOSE ADHESIVE
joins almost any type of material

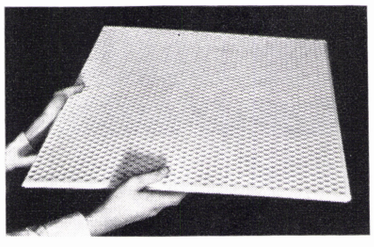
Plastic Mastic, a tough new adhesive introduced initially for industrial maintenance work, can be used to join or repair almost any type of building material: masonry, concrete, metals, wood, ceramics, glass, paper products, and most plastics. It is nonflammable and has no volatile solvents. It is applied by simply mixing, with a trowel or spatula, equal parts of a base material (which contains an epoxy) and a hardener (containing a polyamide). It sets up in about 4 hours; and fully hardened (in rougly 8 hours), it can be sanded, drilled, or machined. Some uses suggested by the manufacturer: installing tiles, railings, or windows; fixing leaks, chips, or cracks in almost anything. Cost: about $30 per 2-gallon set—1 gallon of hardener, one of base.

Manufacturer: Williamson Adhesives Inc., 8220 Kimball Ave., Skokie, Ill.

HONEYCOMB LIGHT PANEL
is lightweight and fireproof

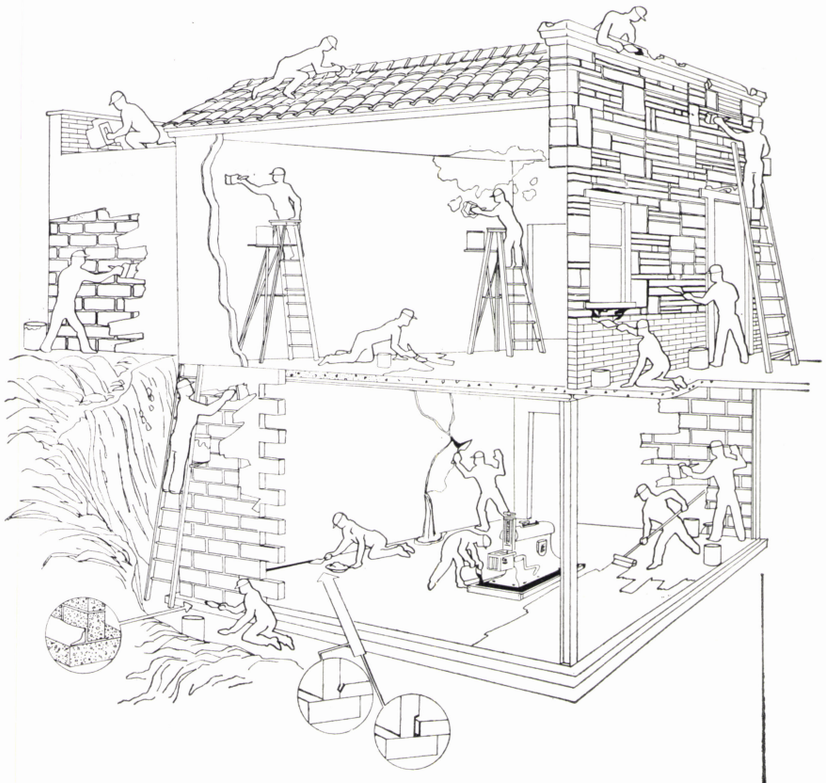
Circlgrid, the honeycomb panel pictured below, is a ½ in. thick, 23¾ in. square plastic light diffuser for overhead fixtures. Designed for mounting in a suspended grid system, the product is made





of twin sheets of polyvinyl chloride hermetically sealed and perforated with cone-shaped holes ½ in. on centers. It is rigid, fire resistant, and weighs only 7 ounces per sq. ft. It can be cut with a knife for easy fitting against walls or around beams, and, since half its surface area is open, sprinkler heads can be mounted out of sight above the suspended ceiling. Cost: roughly $1.50 per sq. ft.

Manufacturer: Cirvac Plastics, Box 655, Erie, Pa. END



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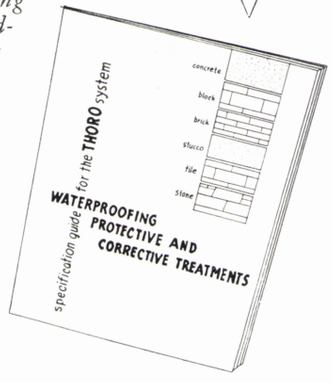

We join with Architectural Forum in it's commemoration to the late Frank Lloyd Wright, a great friend we will sadly miss.

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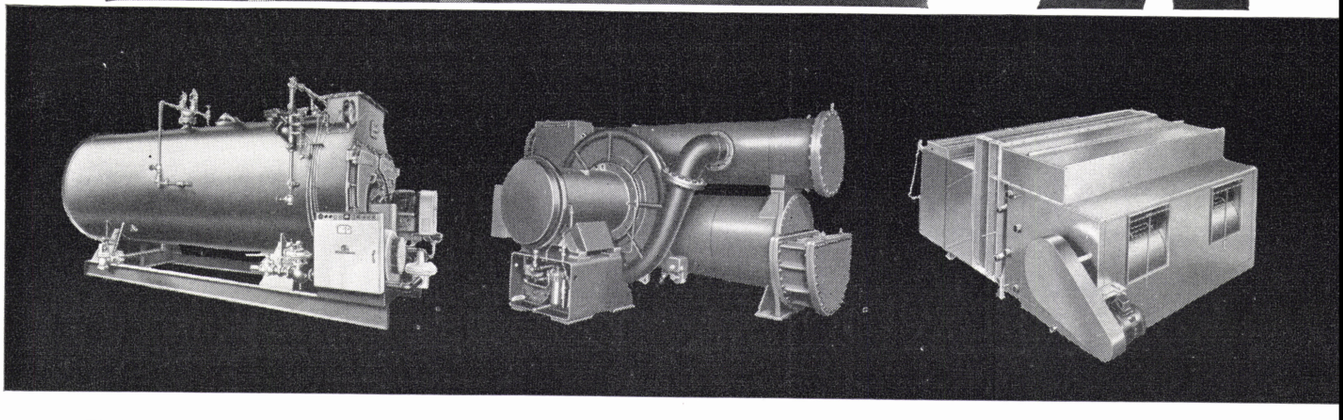

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WHEELER-FULLERTON* LIGHTING BRIGHTENS . . .

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* A cost-saving, special Wheeler-Fullerton engineered grid construction, was used in the 214 classrooms, laboratories and drafting rooms. Striplites and louver support hangers were attached to the grid instead of the slab above. Similar construction was used in library section and 4th floor office areas to support special "hollow square" fixtures and louver supports. The two Physical Education Buildings contain W-F special 800 MA high output recessed fixtures, using Holophane #6024 and #6014 lenses, resulting in high intensity, glareless light.

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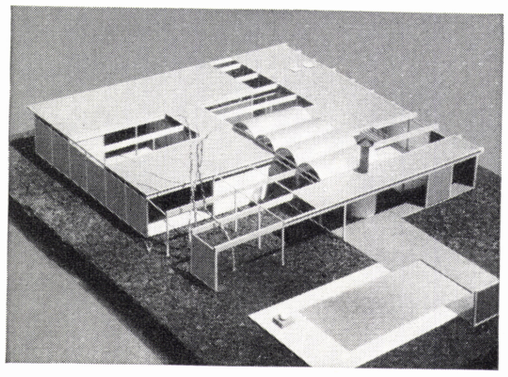
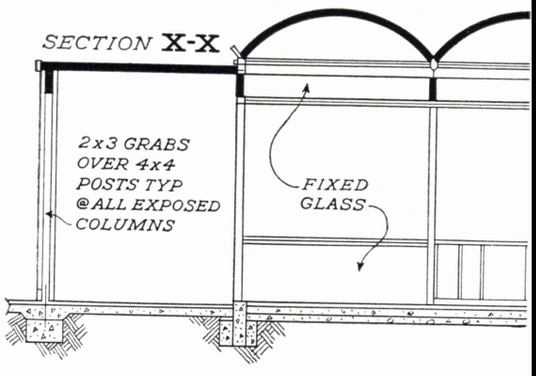
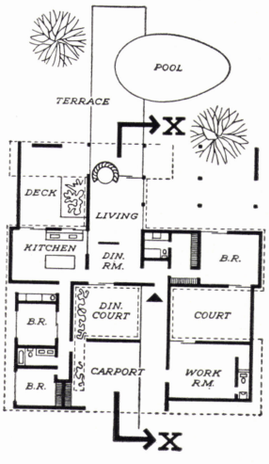
new approaches to structural design with fir plywood



Clean, light lines of this striking residence show how new plywood structural elements can be used to help wood construction meet the requirements of contemporary design.

Case Study House demonstrates imaginative handling of





ARTS & ARCHITECTURE Case House Study No. 20

OWNER: Saul Bass, Whittier, California

ARCHITECTS: Buff, Straub and Hensman
Los Angeles, California

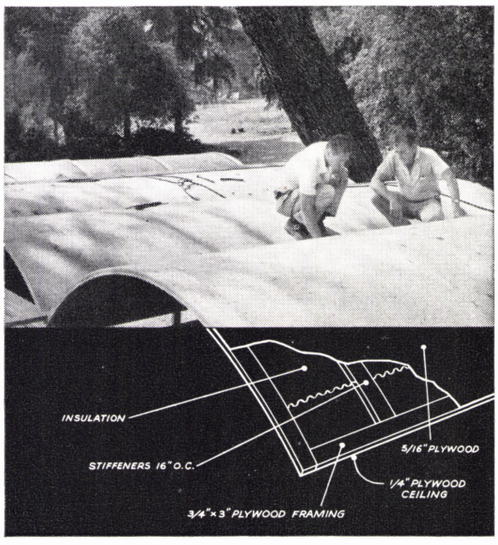
COMPONENTS: Fabricated and erected by
Berkeley Plywood Company

THIS SOPHISTICATED ROOF SYSTEM employs lightweight, shop-fabricated plywood components that present traditionally acceptable wood construction in a fresh context.

The architects report these new plywood structural elements—box beams, barrel vaults and flat stressed skin panels—make sense from a standpoint of cost as well as design. For the loads and spans involved, they say there is no cheaper—or better—way to do the job.

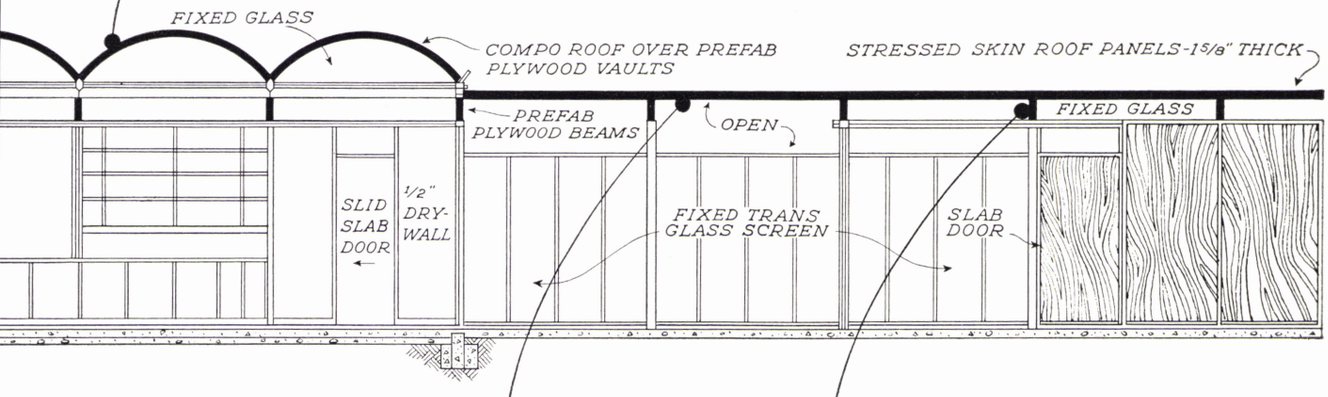
The basic structure is post and beam. Installed cost of the plywood box beams was $2 a foot, using premium overlaid plywood for the finest painting surface. The flat roof panels cost 40c per square foot in place; the barrel vaults 75c. Both were made in 2′ and 4′ widths, 8′ and 12′ lengths, combining roof deck, finish ceiling and insulation in one easily handled component.

→ **FOR MORE INFORMATION** about fir plywood—or DFPA design and engineering consultation services—write (USA only) Douglas Fir Plywood Association, Tacoma 2, Washington.

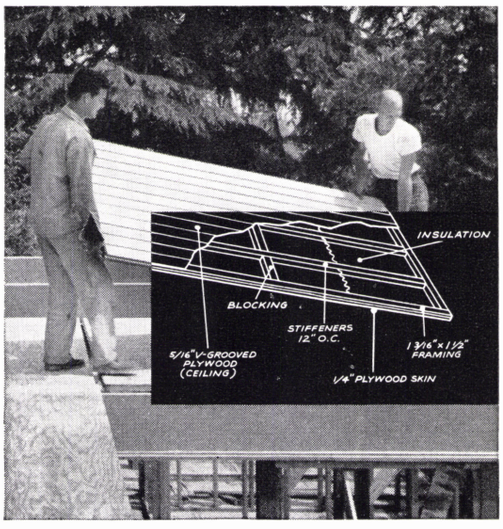


CURVED PANELS over living areas have same basic construction as flat panels. Underside serves as finish ceiling.

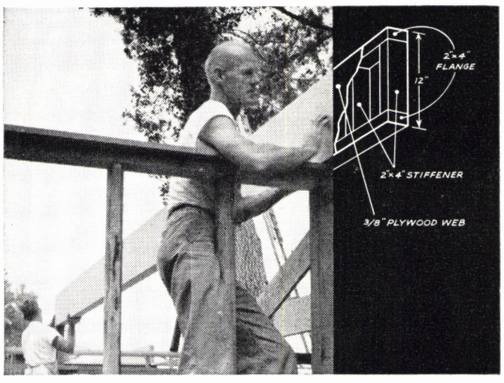
fir plywood components



FLAT STRESSED SKIN PANELS have 5/16" upper, 1/4" lower plywood skins with lumber edge frames and stiffeners.



PLYWOOD BOX BEAMS are light, easily handled, span 16′ on 8′ centers. Fir plywood skins are nail-glued to 2 x 4s.



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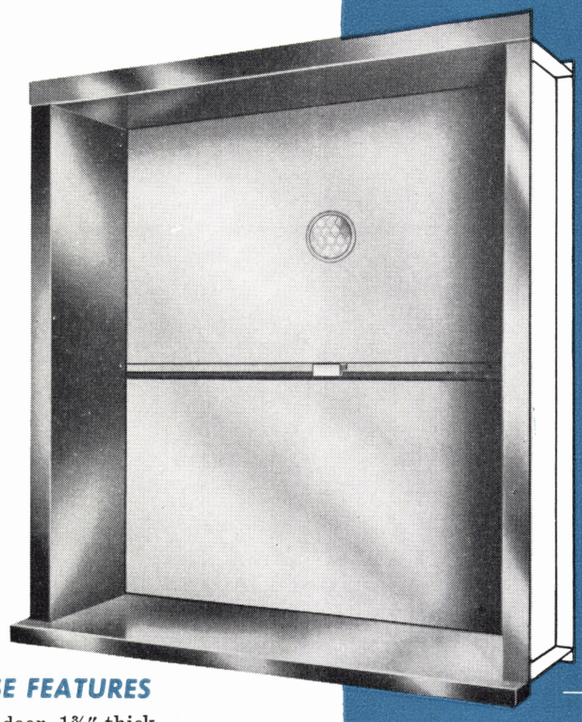
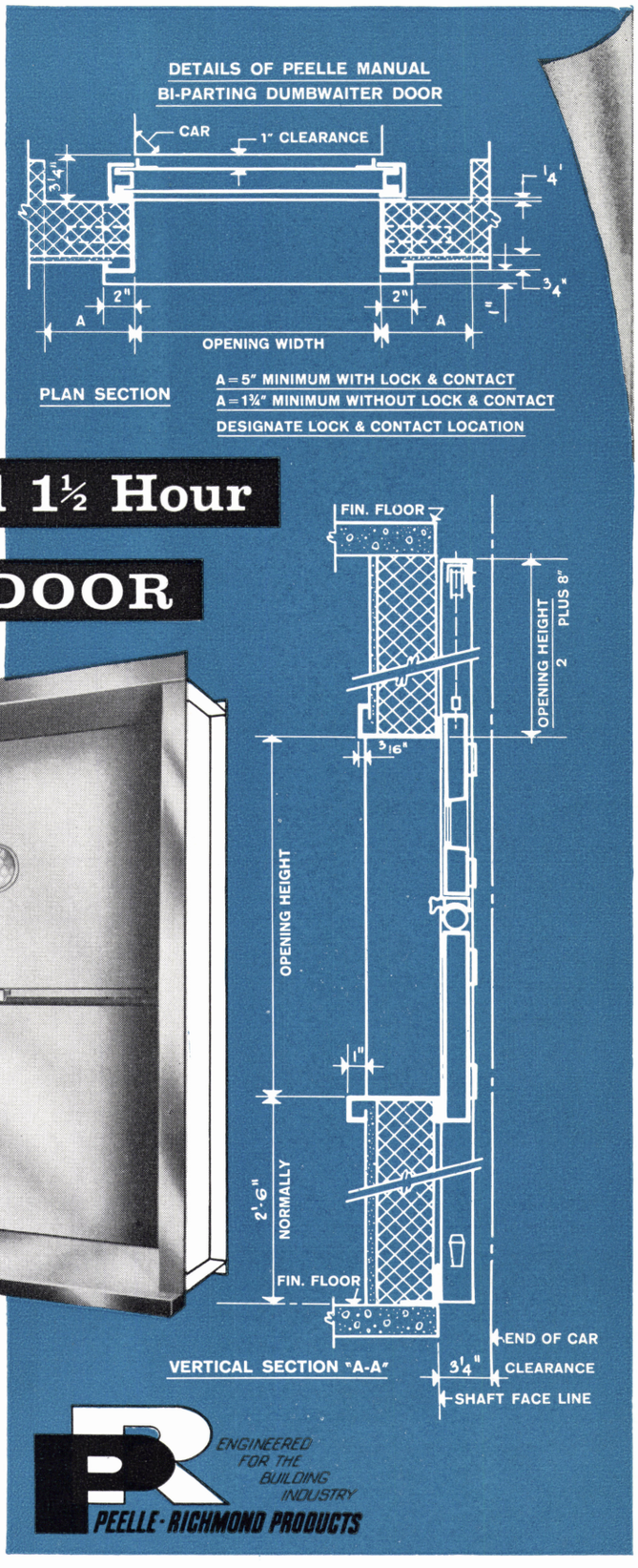


This new dumbwaiter door offers still further evidence of the Peelle policy to continually enhance product safety and efficiency through progressive engineering advances.



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Editorial

Too much building?

The monthly letter of the First National City Bank of New York, one of the most respected business reports in the country, recently came up with a rather astonishing statement. In commenting on inflation in building costs, it remarked that "as a broad generalization, too much money has been available for, and devoted to, construction in general ever since World War II."

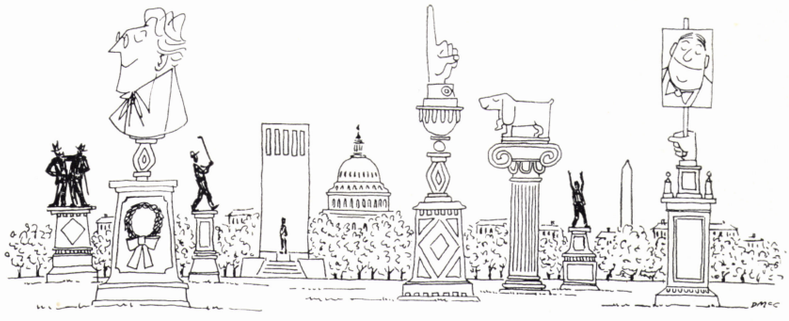
The generalization is broad, all right. In fact, we fear, it fits reality about as well as an open umbrella fits into a suitcase. Looking around America—at 4 million slum housing units still standing, at schools which are still short 140,000 classrooms, at all our overcrowded hospitals, decaying courthouses, and other civic inadequacies—we simply cannot believe that the nation has been spending too much for construction. Nor can we believe it when we look at cold dollar statistics, at the precise share of the nation's prodigious gross national product which construction has been getting.

Since 1949, new construction outlays, on a current dollar basis, have climbed from $24 billion to $49 billion last year, a rise of a whopping 104 per cent. But as a per cent of gross national product, which also has been expanding mightily, construction outlays have moved in a far narrower range. In 1949, new building was 9.4 per cent of GNP, and in 1950 it moved up to 10.5 per cent (which was just about the same ratio as in 1929). Since 1950, however, new building's share of GNP has increased only seven-tenths of one percentage point, to 11.2 per cent last year.

This seems a modest increase, indeed, for an industry which is as vital to the U.S. economy, and community, as construction is. Popularly, of course, automobiles are supposed to be the thing that makes the economy hum, a notion which Detroit has carefully nurtured. Yet, in terms of employment, contract construction alone accounts for more workers—a total of 2.7 million to nearly 3 million a year—than the automobile and chemical industries combined. Further, construction generates an incalculable amount of employment and profits throughout a vast array of materials and other industries. For every $1 million of construction put in place (figured in 1947-49 prices), there has had to be, on the average of recent years, production of more than 1 million board feet of softwood lumber, 8,687 barrels of Portland cement, 115 tons of structural steel, 203,000 sq. ft. of gypsum board and lath, and an estimated 10,000 gallons of paints and varnishes. This is a tremendous generator for the economy, a fact which was amply

proved in the 1958 recession when a stable construction volume not only softened the decline, but led the way to recovery.

Thus, on both social and economic grounds, there seem many reasons why we should spend more for construction, but certainly not less. Granted there could be cutbacks in certain areas, notably highway construction and single-family residential building, both of which have been pushed hard by government assistance. But what might be saved in these areas should not be taken from the whole. Rather, it should be put to the sort of building that we must have to save our cities: urban renewal, apartment construction, new civic facilities to replace our aging stock. For, as FORUM has pointed out often, the city is getting far less building today than its health requires. And, if our cities are allowed to become obsolete, there will be losses in civilization, commerce, and cold cash that some future issue of First National City Bank's monthly letter might more appropriately and accurately view with alarm.



Monumental mistake

With all due respect to the late Senator Robert A. Taft, it is too bad that the new Taft memorial bell tower was ever built on Capitol Hill. Too bad for two reasons: first, as a piece of architecture it is not very handsome; second, since Senator Taft was a political, rather than a national, hero, it seems inevitable that the Democrats will ask for equal time. Now, considering how big that Taft Monument really is (it is 115 ft. tall) and how noisy (its 27 bells ring 96 times daily), it is easy to imagine (perhaps even hear) what might result if the door is ever opened to a freewheeling, partisan monument-building bee.

What can be done? Thankfully something is being done. A bill has been offered in Congress which would prohibit the erection of a commemorative statue in the Capitol park system until the subject has been dead "at least 50 years." It is encouraging that the Fine Arts Commission, though it balks at the fixed 50-year time lag, has publicly endorsed the spirit of the bill. And it is even more encouraging that the author of the bill, Representative Stuart L. Udall of Arizona, is a Democrat—for the Democrats who control Congress may suddenly realize that by simply passing this, or a similar bill, they could come home from this session of Congress looking very noble indeed. They could leave posterity the nicest sort of monument to their own farsightedness: a Washington free from a choking jungle of uninspiring marble mementos.

FRANK
LLOYD
WRIGH

FRANK LLOYD WRIGHT

"When the Winslow House was being built in 1893 . . . I remember climbing up into an upper part of the building during construction to listen to comments. I pulled up the ladder and waited. In came a young fellow with a couple of young women and the fellow said, 'Have you seen the man who built this? God, he looks as if he had a pain.' Another one said, 'They say this cost $30,000, but I can't see it.' I learned my lesson: I never listened like that again."

Nor did Frank Lloyd Wright listen very closely to what was going on around him—neither in architecture, nor in any other expression of American culture. But the basic American culture concerned him deeply. Through seven decades of building nearly every type of building, he was extraordinarily sensitive to his times, as only a man who made the epoch his own could have been.

Just as Wright wondered at the astonishment the Winslow House (opposite page) created among his neighbors in Oak Park and River Forest, Ill., in 1893, so others may wonder now. What *was* so different about the Winslow House? Was it merely a matter of broad roof overhangs or long horizontal lines? Was it simply that the house revealed Wright's extraordinary ability to organize sundry building elements into a unified whole or his uncommon sensitivity to scale and proportion? In part, yes. But there was something else.

Frank Lloyd Wright called the Winslow House a "thought-built house." And notwithstanding the fact that he was a virtuoso designer, it is this quality that made the house different and that increasingly widened the gap between Wright's own building and the building of his contemporaries —all the way through to 1959.

Wright's more consistent term for "thought-building" was organic architecture—a term almost universally misunderstood. The term, in fact, has kept many critics from seeing deeply into the work itself and has caused them to conclude he was merely a late exponent of Art Nouveau or to compare his buildings to biological growths.

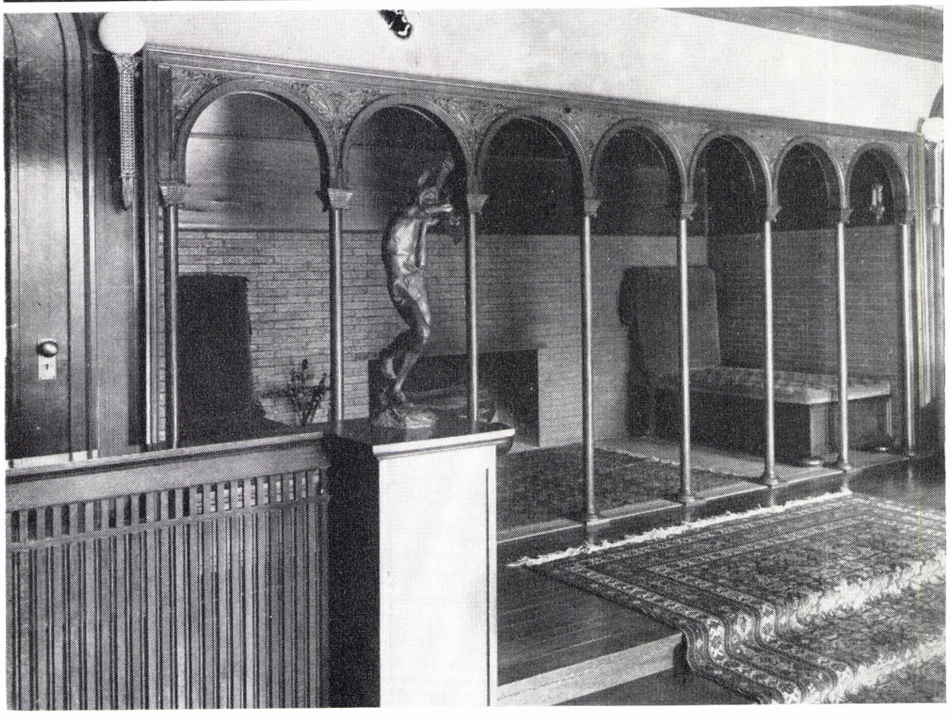
But while Wright agreed that he was an agrarian, he also proclaimed himself a radical—which, he always added, meant literally "to the root." Going to the root of anything, especially in architecture, is an exceedingly difficult thing to do. And to get others to follow is more difficult still. But this urge for true followers led Wright to preach and teach his whole life long, despite his protestation that he wanted to be neither preacher nor teacher.

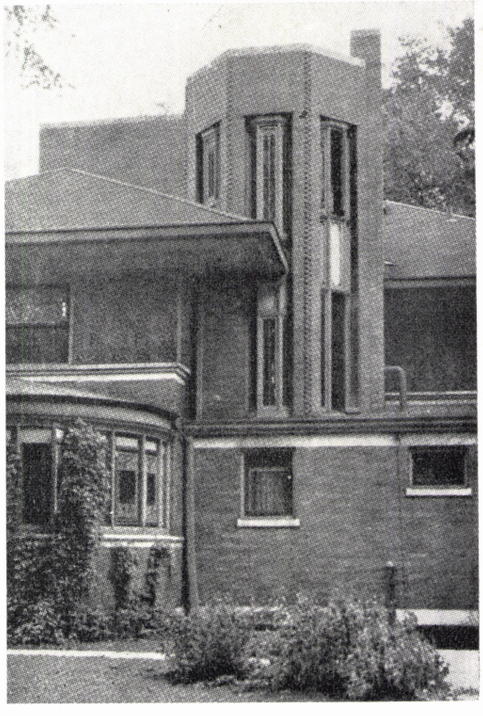
In his 1931 lectures, given at Princeton at a time when he was not sure he would ever have the chance to build an important building again, Wright set down, in short sentences, 51 statements of what he meant by organic architecture. Among them are these: "Architecture is the scientific art of making structure express ideas. Architecture is the triumph of human imagination over materials and methods and men—Man in possession of his earth. Architecture is man's sense of himself embodied in a world of his own. As the man is, so will his building be."

But Wright's compulsion to demonstrate his concept of organic architecture is, after all, most evident in his work. This issue of FORUM is therefore dedicated, like the special Frank Lloyd Wright issues of 1938 and 1948, not to the man, but to his work—first to a review of his early work, followed by his two most recent buildings, his own Taliesins, his houses, and his unfinished work.

Through seven decades of architectural work Frank Lloyd Wright was the consistent pioneer

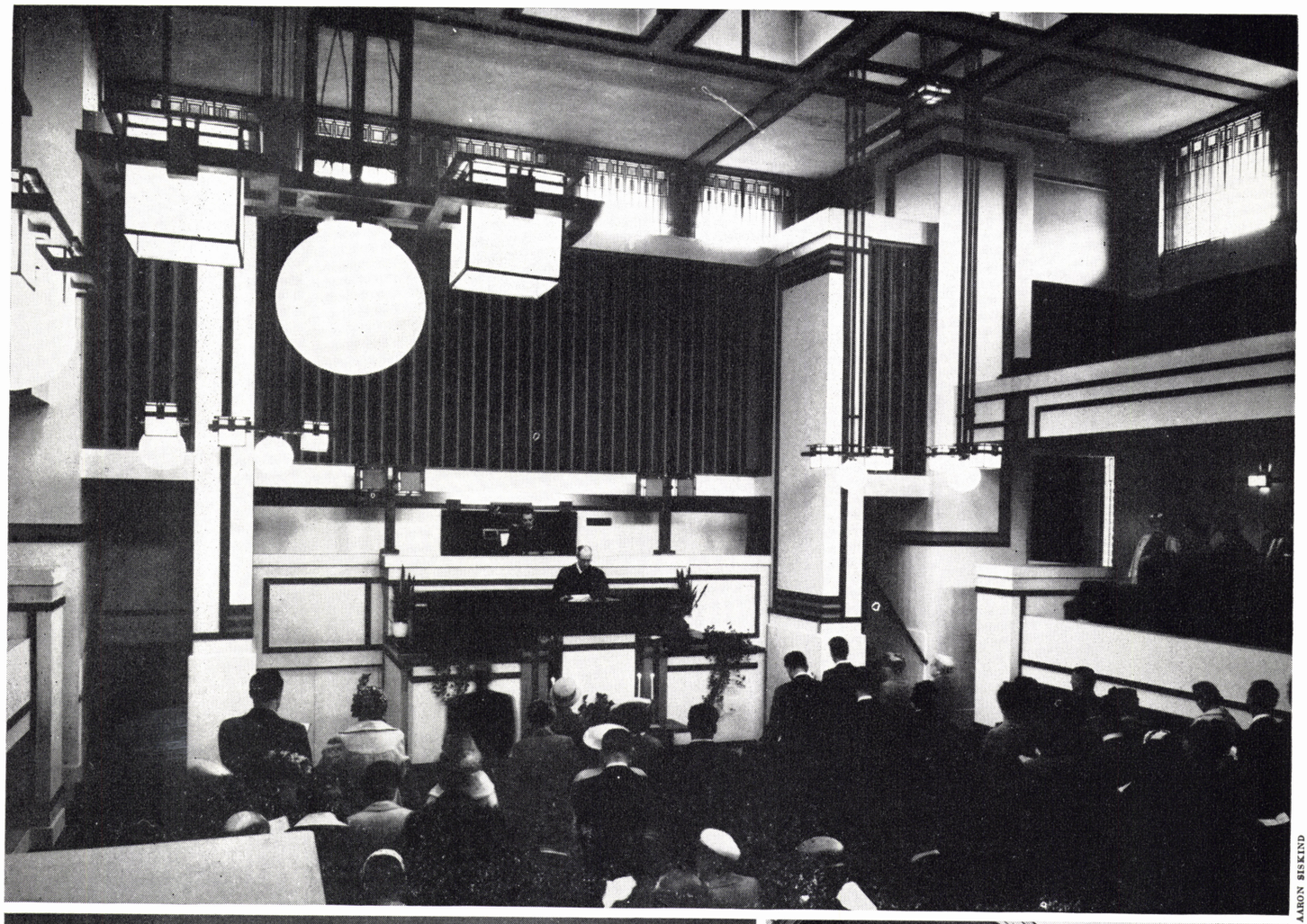
PHOTOS: CHICAGO ARCHITECTURAL PHOTO CO.; AARON SISKIND

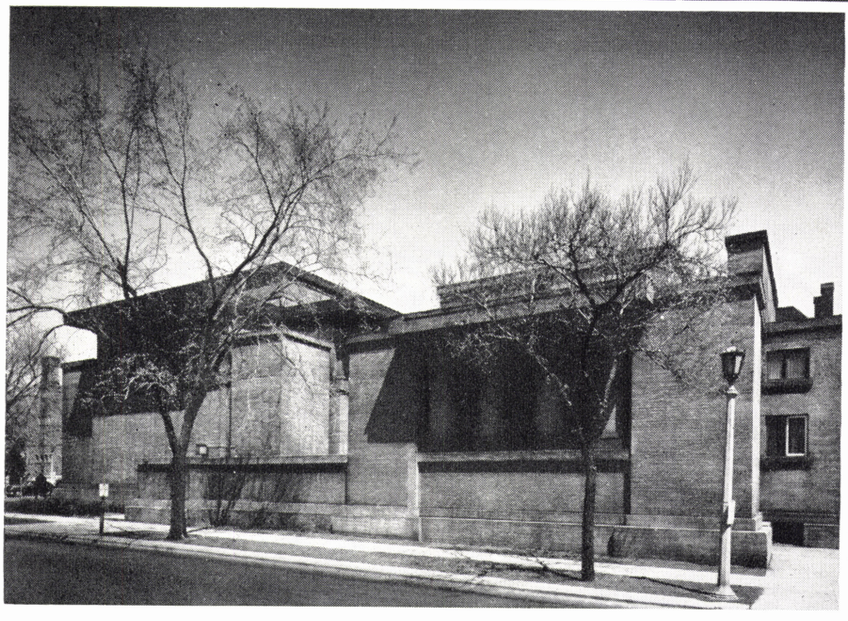




THE FIRST DECADE—1889-99. WILLIAM H. WINSLOW HOUSE AND STABLE, AUVERGNE PLACE, RIVER FOREST, ILLINOIS. 1893.

". . . I could hardly believe I really had a job. It was difficult to believe the initiative I had taken was now a reality. But soon I found that it was; the Winslow House had burst on the view of that provincial suburb like the Prima Vera in full bloom. . . . The sense of shelter emphasized, the walls perforated by a single opening. . . . The matter of fenestration became exceedingly difficult and more than ever important, and often I used to gloat over the beautiful buildings I could build if only it were unnecessary to cut windows in them; but the holes were managed at first frankly and later as elementary constituents of the structure grouped in rhythmical fashion." (Left, for comparison: a building typical of the period—the C. D. Palmer House, Cincinnati, Ohio. 1894. Architect: G. W. Rapp.)



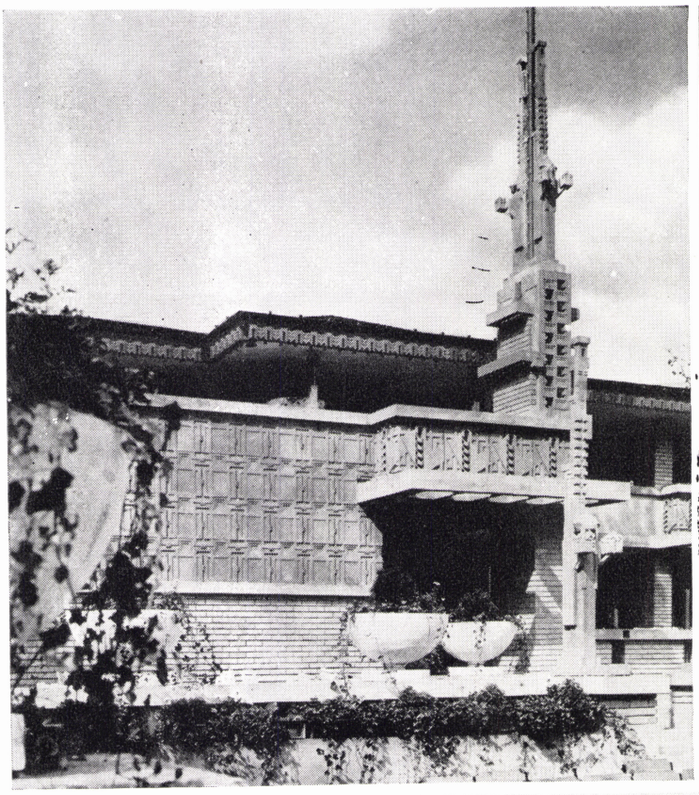


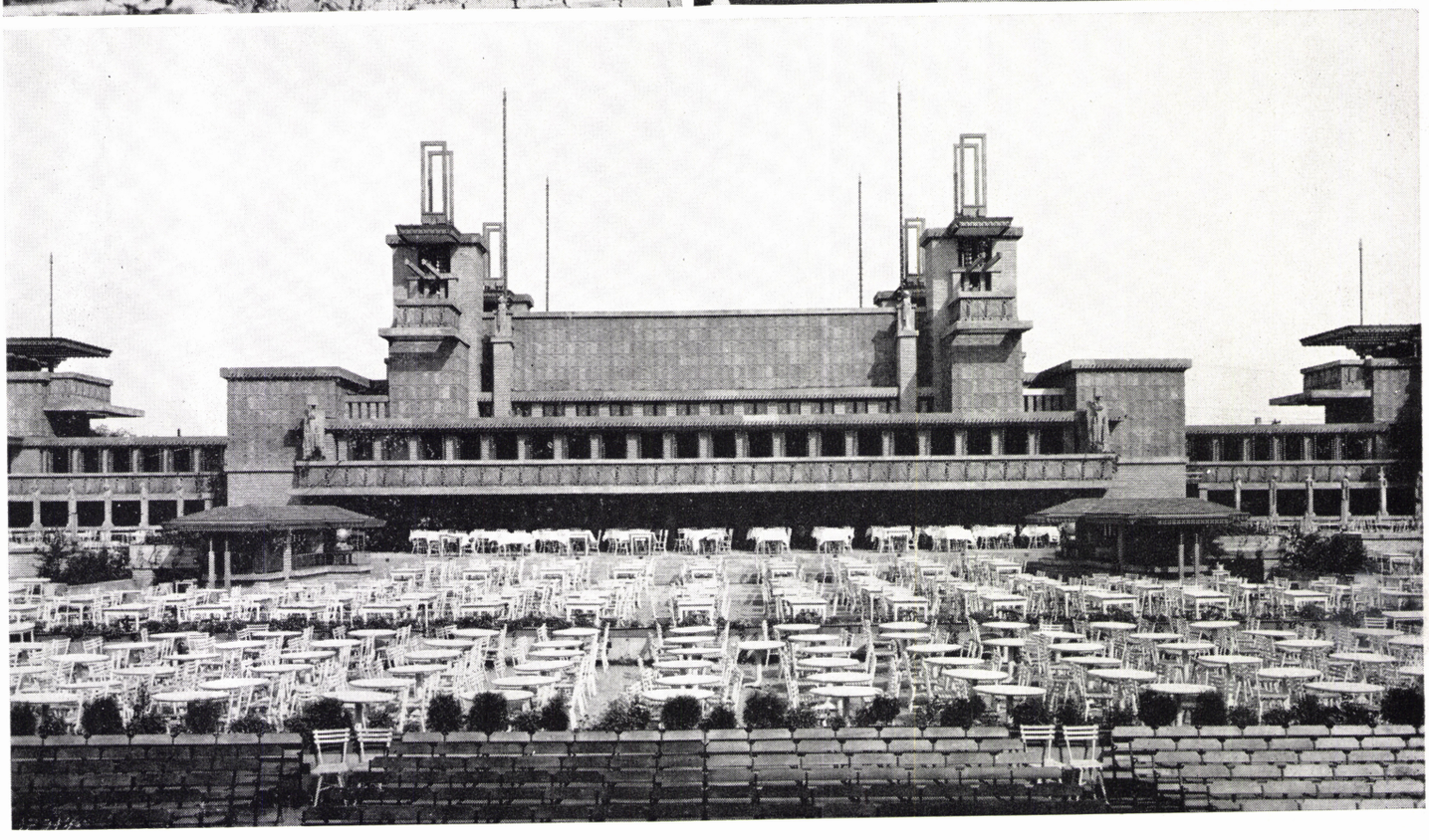
PHOTOS: HEDRICH-BLESSING; AARON SISKIND

THE SECOND DECADE—1899-1909. UNITARIAN CHURCH, KENILWORTH AVENUE AT LAKE STREET, OAK PARK, ILLINOIS. 1906.

". . . Unity Temple is where I thought I had it, this idea that the reality of a building does not consist in the walls and roof but in the space within. . . . The first idea was to keep a noble room for worship in mind and let that sense of the great room shape the whole edifice. . . . What shape? Well, the answer lay in the material: concrete was cheap. Why not make the forms so the concrete could be cast as separate blocks and masses, these grouped about an interior space? . . . Inside, the center ceiling between the four great posts became skylight, daylight sifting through between the intersecting concrete beams, filtering through amber-glass ceiling lights." (Left: Church of St. John the Evangelist, Cambridge, Mass. 1906. Architects: Maginnis, Walsh & Sullivan.)

PHOTOS: CHICAGO ARCHITECTURAL PHOTO CO.





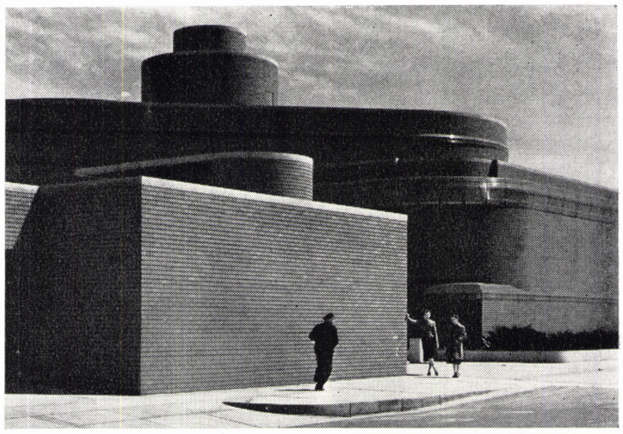
THE THIRD DECADE—1909-19. MIDWAY GARDENS, COTTAGE GROVE AVENUE AT SIXTIETH STREET, CHICAGO, ILLINOIS. 1914.

". . . Meantime the straight line, square, triangle, and circle I had learned to play with in kindergarten were set to work in this developing sense of abstraction, by now my habit, to characterize the architecture, painting, and sculpture of the Midway Gardens. . . . The Midway Gardens were planned as a summer garden: a system of low masonry terraces enclosed by promenades, loggias, and galleries at the sides, these flanked by the Winter Garden. . . . The Gardens, though still unfinished, had opened in as brilliant a social event as Chicago ever knew. Chicago marveled, acclaimed, approved. Chicago, the unregenerate, came to rendezvous with a new beauty." (Left: Booth Theatre, New York, N. Y. 1914. Architect: Henry Herts.)

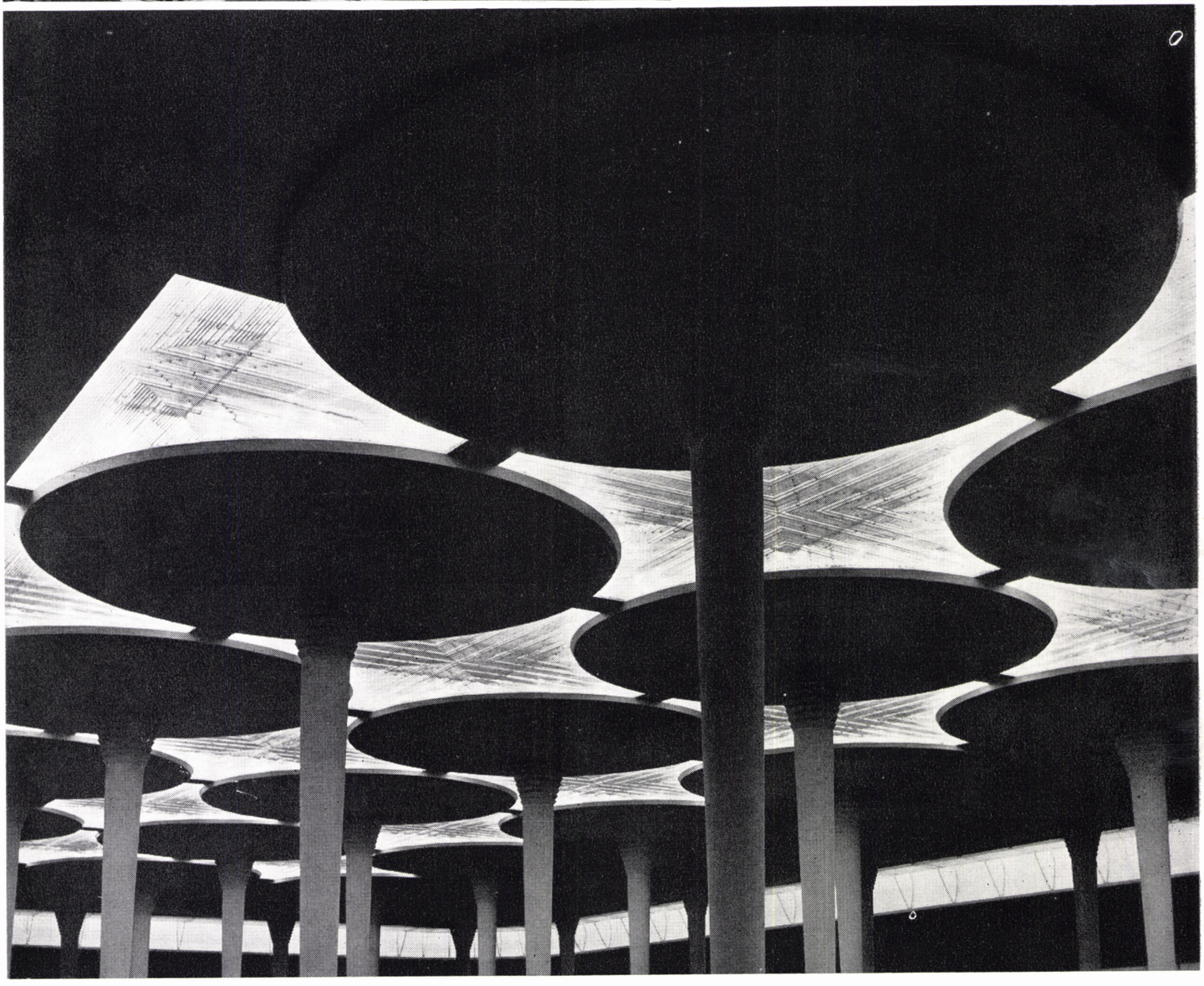
PHOTOS: N. Y. PUBLIC LIBRARY PICTURE COLLECTION; PALMER PICTURES

THE FOURTH DECADE—1919-29. THE IMPERIAL HOTEL, CHIYODA-KU, TOKYO, JAPAN. PLANNED 1917. CONSTRUCTION 1920-1922.

". . . Yes, I was eager to go, for again I wanted to get away from the U.S. I still imagined one might get away from himself that way—a little. . . . The sense of impending disaster would hang over me, waking or dreaming. This fitted in well enough with the sense of earthquake, from the actuality of which I would have to defend the new building. . . . A construction was needed where floors would not be carried between the walls. . . . This meant the cantilever, as I had found out by now. . . . Japanese prints had intrigued me and taught me much. . . . A process of simplification in art in which I was myself already engaged, beginning with my twenty-third year, found much collateral evidence in the print." (Left: The Industrial Bank of Japan, Ltd., Tokyo, Japan. 1923. Architect: Setsu Watanabe.)



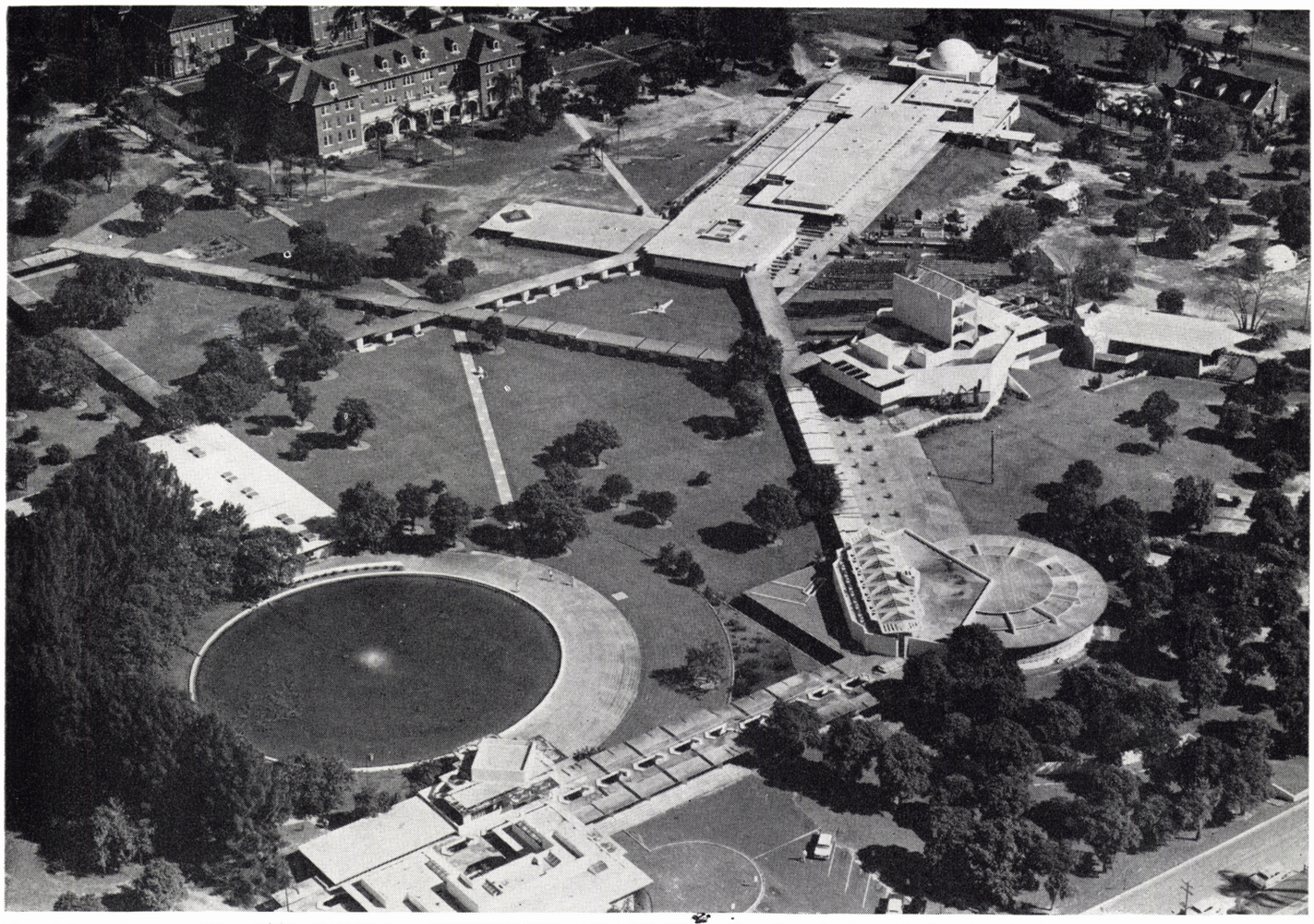
TORKEL KORLING

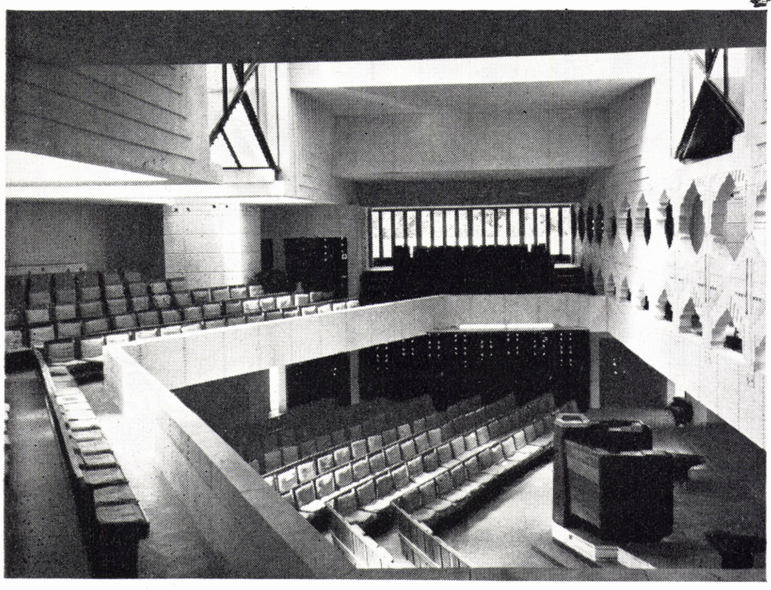


THE FIFTH DECADE—1929-39. S. C. JOHNSON & SON ADMINISTRATION BUILDING, HOWE STREET, RACINE, WISCONSIN. 1936.

ROBERT M. DAMORA

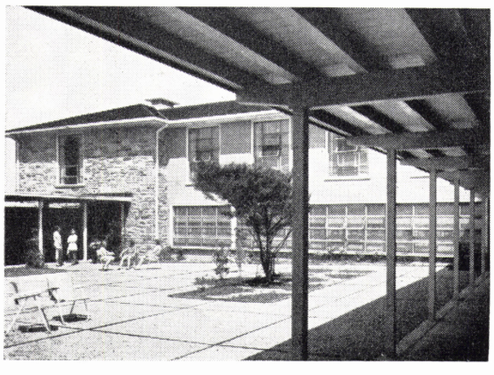
". . . Well, this hunch of Hib Johnson's so had it that the prosperity of his now overcrowded and solidly prosperous wax concern should enable the company to do something worth-while for the daily lives of its numerous employees. . . . What a release of pent-up creative energy, the making of those plans. . . . The main feature of construction was the simple repetition of slender hollow monolithic dendriform shafts or stems—the stems standing tiptoe in small brass shoes bedded at the floor level. The great structure throughout is light and plastic; an open glass-filled rift is up there where the cornice might have been." (Left: Chevrolet Motor & Axle Division, Tonawanda, N. Y. 1938. Architects: Albert Kahn Inc.)





PHOTOS: F. E. GUERRERO; PETER ROLL, CONTINENTAL AIRVIEWS

THE SIXTH DECADE—1939-49. FLORIDA SOUTHERN COLLEGE, LAKELAND, FLORIDA. PLANNED 1938. CONSTRUCTION 1940-59.



". . . When Dr. Ludd M. Spivey, the presidential good-genius of Florida Southern College, flew north to Taliesin, he came with the express and avowed purpose of giving the U.S. at least one example of a college wherein modern life was to have the advantages of modern science and art in actual building construction. He said he wanted me as much for my philosophy as for my architecture. I assured him they were inseparable. . . . Study these buildings from the inside out if you would know something about the kind of building we call organic architecture. . . . Ask 'why' whenever you like or if you like what you see, and you would start along the path of a true culture." (Left: Goucher College, Towson, Maryland. 1938. Architects: Moore & Hutchins.)

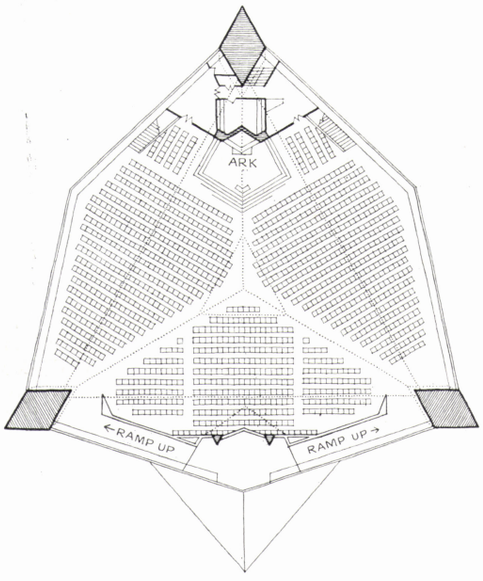
P. E. GUERRERO

THE SEVENTH DECADE—1949-59. SYNAGOGUE FOR THE BETH SHOLOM CONGREGATION, ELKINS PARK, PENNSYLVANIA. 1959.

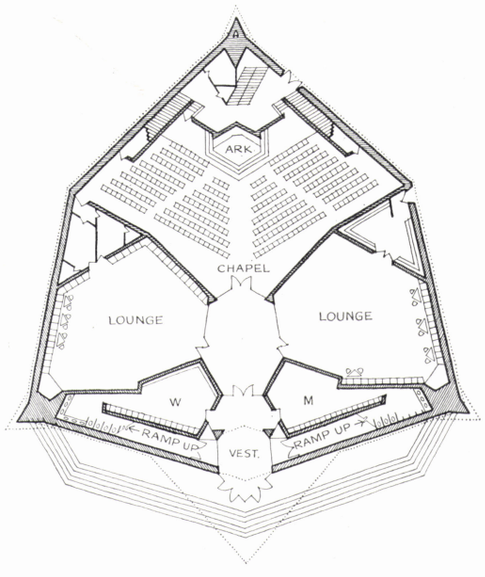
© EZRA STOLLER

". . . At last a great symbol! Rabbi Mortimer J. Cohen gave me the idea of a synagogue as a 'traveling Mt. Sinai'—a 'mountain of light.' We chose white glass. Let God put his colors on. He's the great artist. When the weather is sunny, the temple will glitter like gold. At night, under the moon, it will be silvery. On a gray day it will be gray. When the heavens are blue, there will be a soft blue over it." Says Rabbi Cohen, whose name Wright put on the plans as codesigner: "The most thrilling result is that my people, who were slow and skeptical about the building at first, have fallen in love wit it." (Left, for comparison, a building typical of the present decade: Jewish Community Center, White Plains, N.Y. 1958. Architect: Fritz Nathan.)

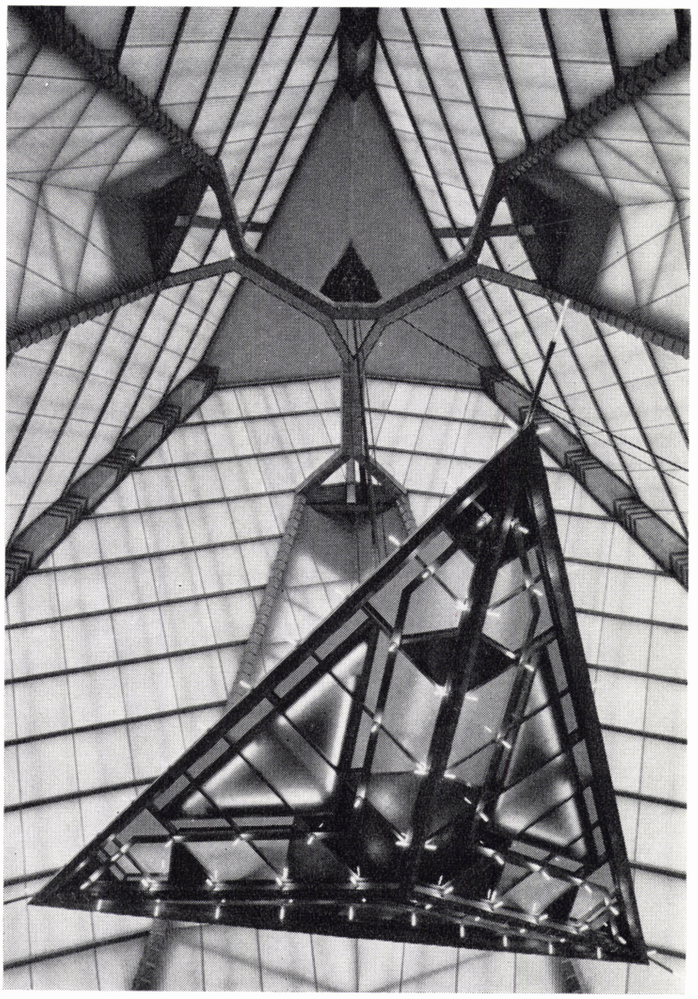
INTERIOR OF BETH SHOLOM SYNAGOGUE: A GREAT TRANSLUCENT "MOUNTAIN OF LIGHT" RISES AROUND THE CONGREGATION.

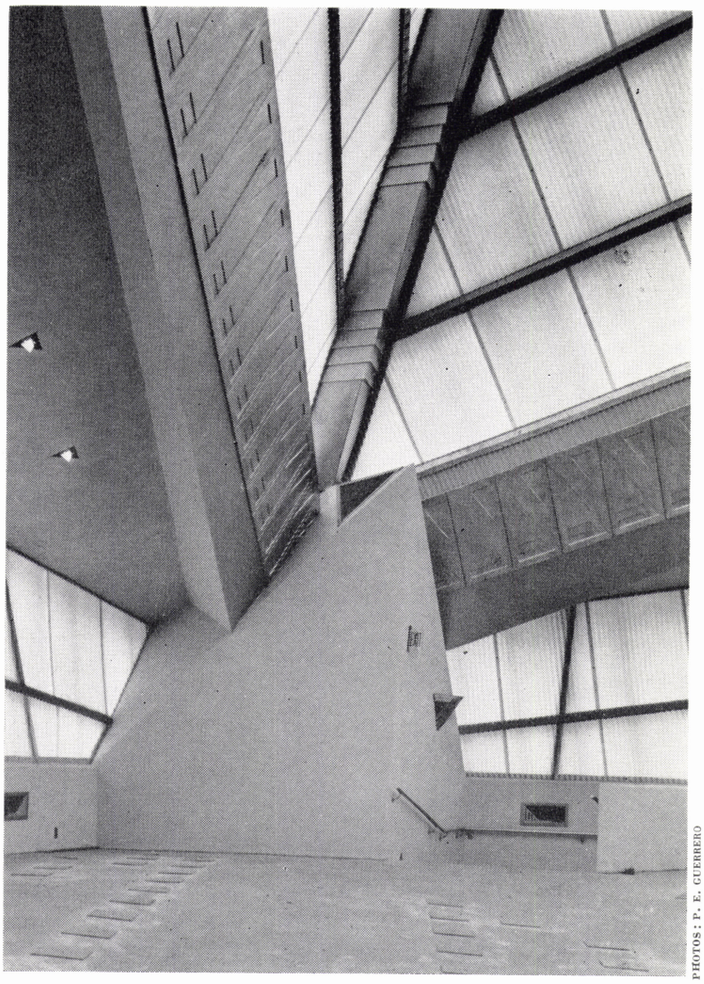


UPPER LEVEL



LOWER LEVEL





PHOTOS: P. E. GUERRERO

"When you go into a place of worship, you ought to feel as if you were in the hands of God." The plan of Wright's $1.3 million Beth Sholom Synagogue is hexagonal in shape (above), like a pair of hands cupped around the congregation. Side ramps emerge at prowlike corner buttresses into the main hall (photo right) which will seat 1,040. The interior rises over 80 ft. in a great translucent tent of corrugated plastic and glass; from the top of the tripod structure hangs a single chandelier of brilliant colored glass trimmed with spiky incandescent lights. Contractor: Haskell Culwell Construction Co.

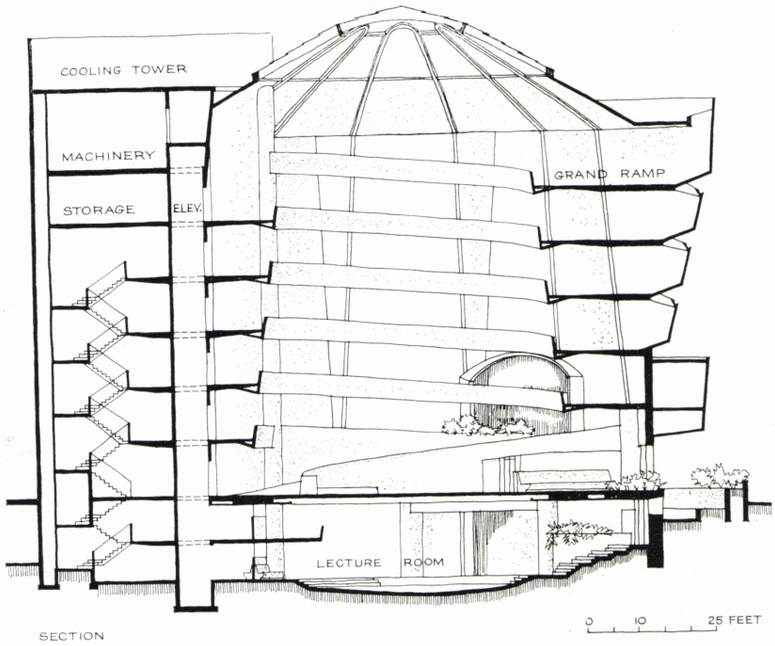
THE EVER EXPANDING RAMP SPIRALS GENTLY UPWARD, REACHING CONTINUOUSLY TOWARD THE SUNLIT CROWN OF THE ROOM.

Guggenheim Museum: a new continuity challenges old precepts of art and architecture.

Since construction began in 1956, the Guggenheim Museum has been New York's most watched building. Many sidewalk observers love it; many hate it. But neither lovers nor haters have properly anticipated the actual experience of entering the great interior space and walking the Grand Ramp.

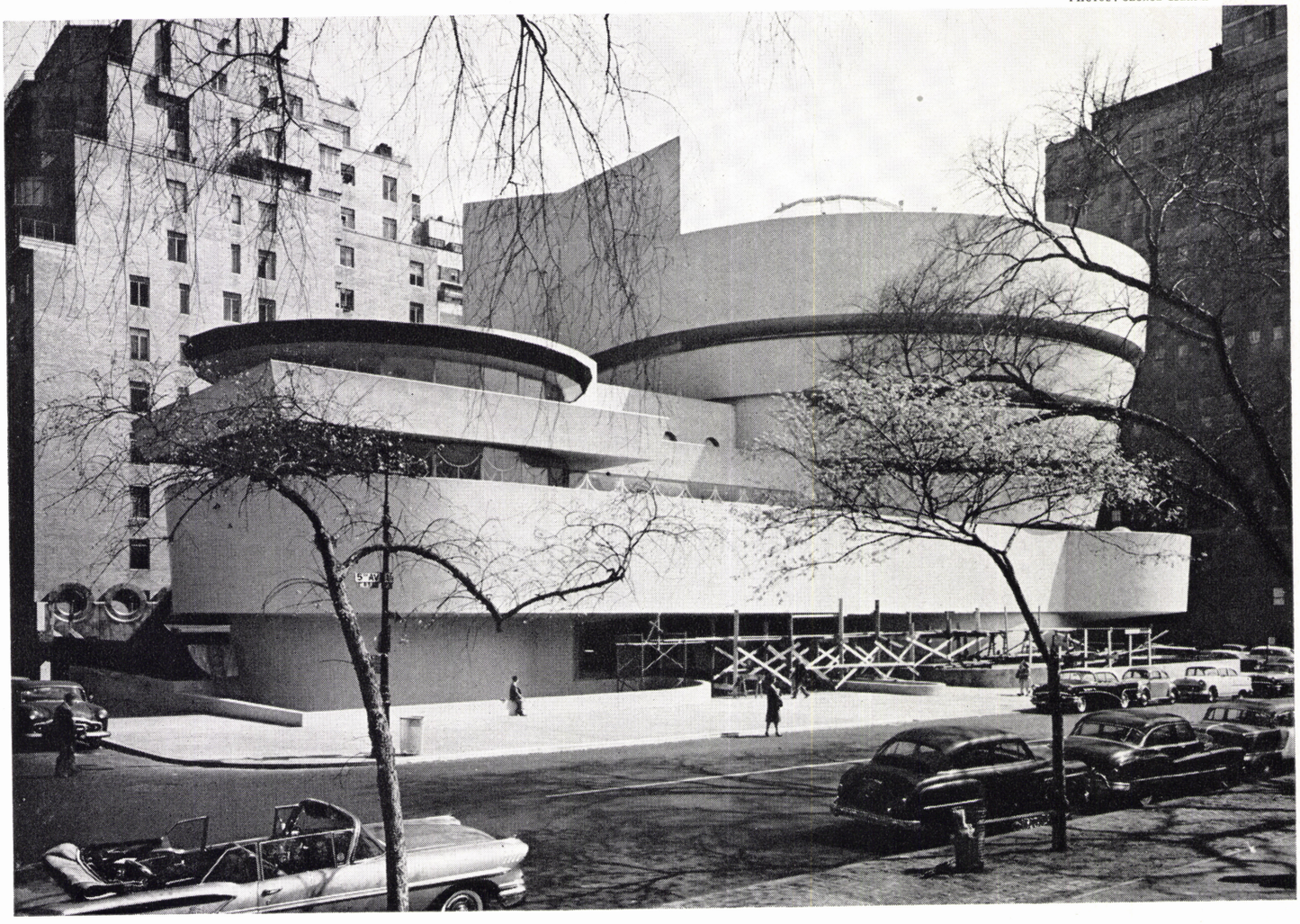
Taking the cue from Founder Guggenheim's notion that the rectilinear frame of reference in a painting had more to do with the frame than with the painting, Wright's design shuns everything square and rectilinear in the building itself. The result, as Wright promised, is "a great repose, like the atmosphere of an unbroken wave."

Although there is no substitute for the actual experience of being in the space, the progress photographs on these pages suggest, for the first time, some of the quality of the space.

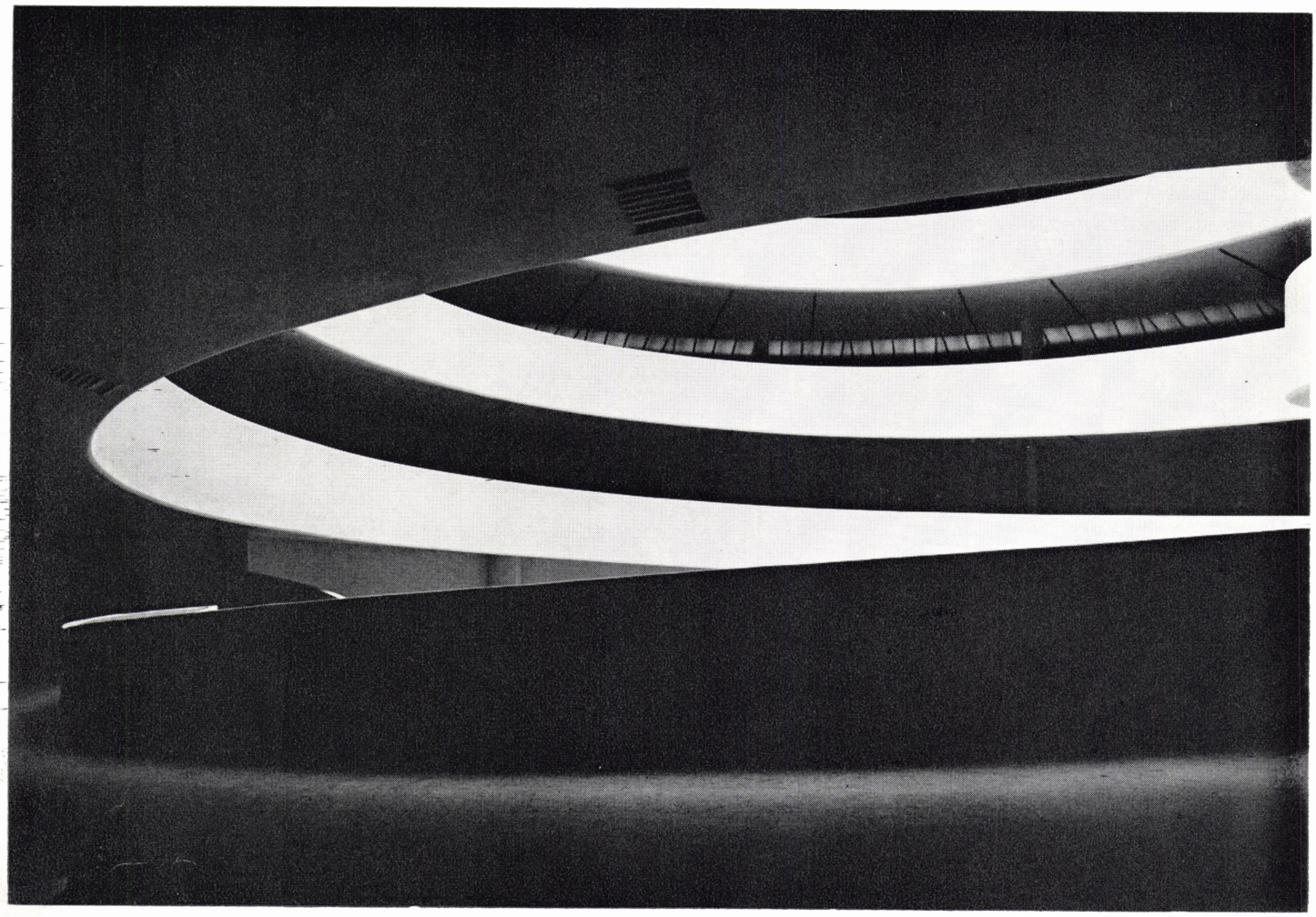


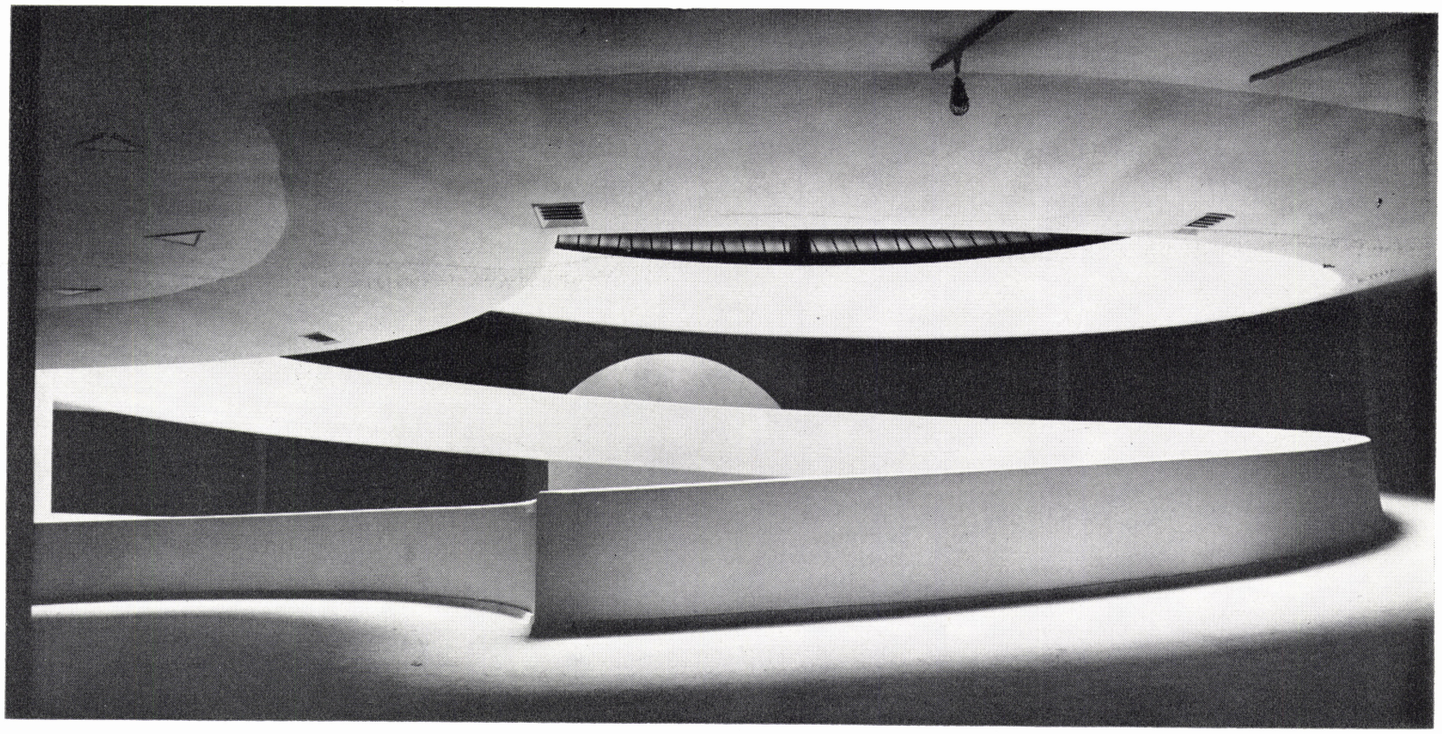
SECTION

PHOTOS: GEORGE CSERNA



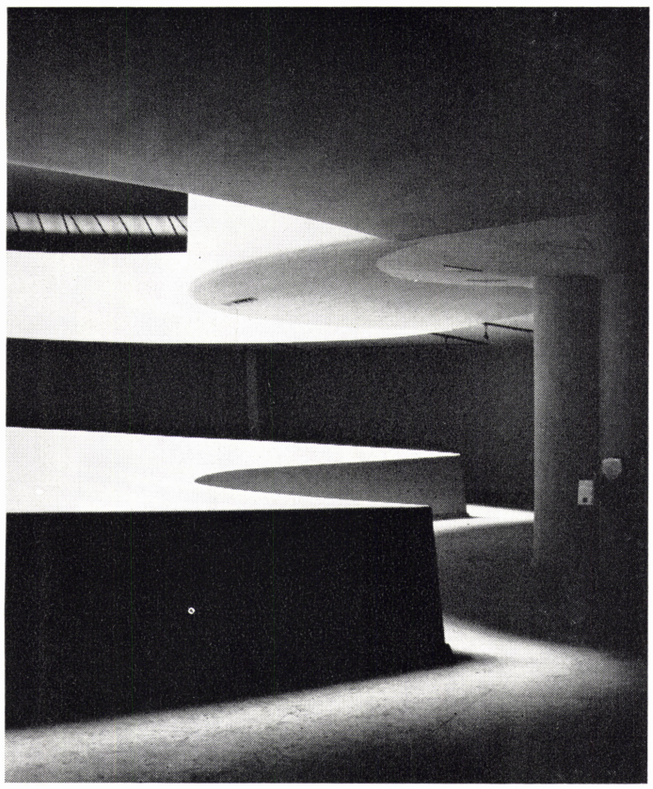
" . . . HERE FOR THE FIRST TIME ARCHITECTURE APPEARS PLASTIC. ONE FLOOR FLOWING INTO ANOTHER, INSTEAD OF THE USUAL

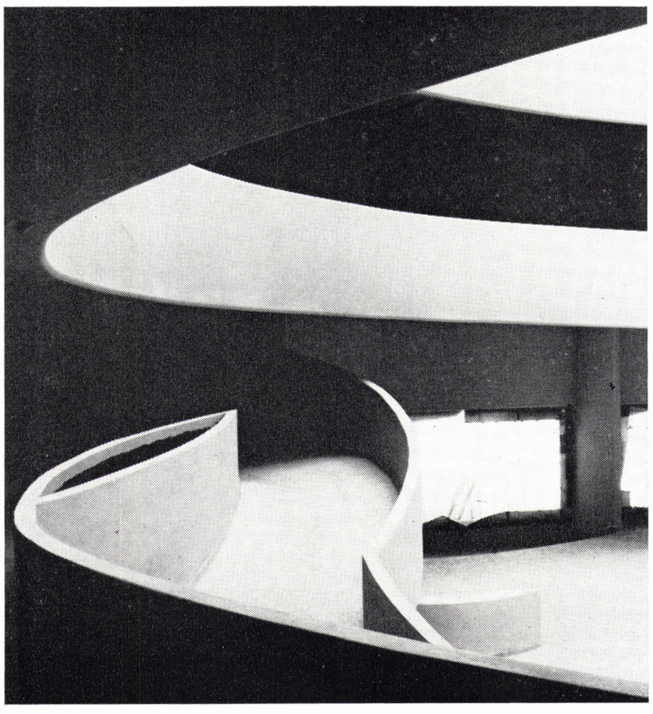


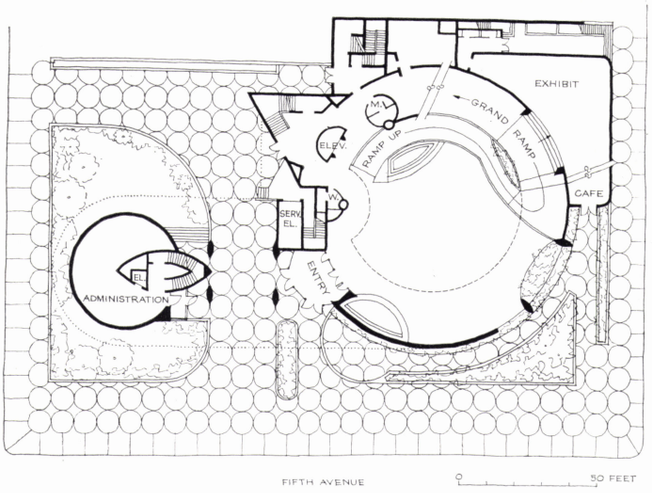


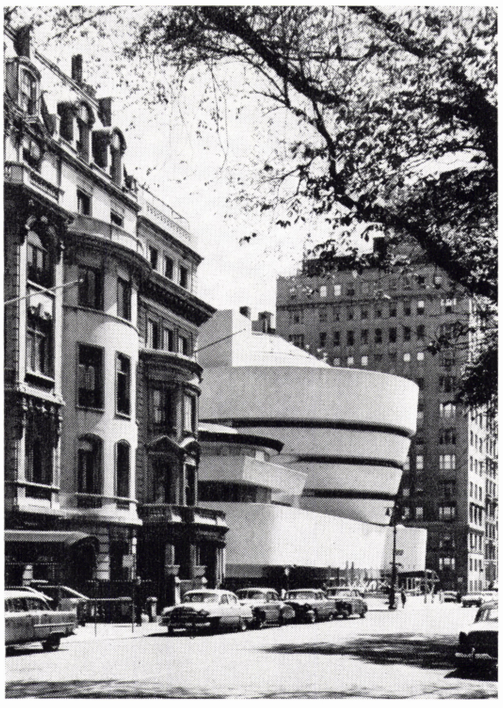
SUPERIMPOSITON OF STRATIFIED LAYERS. . . . UNITY OF DESIGN WITH PURPOSE IS EVERYWHERE PRESENT."—FRANK LLOYD WRIGHT.

CHANGES IN INTERIOR PATHS AND EXTERIOR DETAIL INCREASE THE IMPACT OF THE CENTRAL FEATURE: THE GRAND

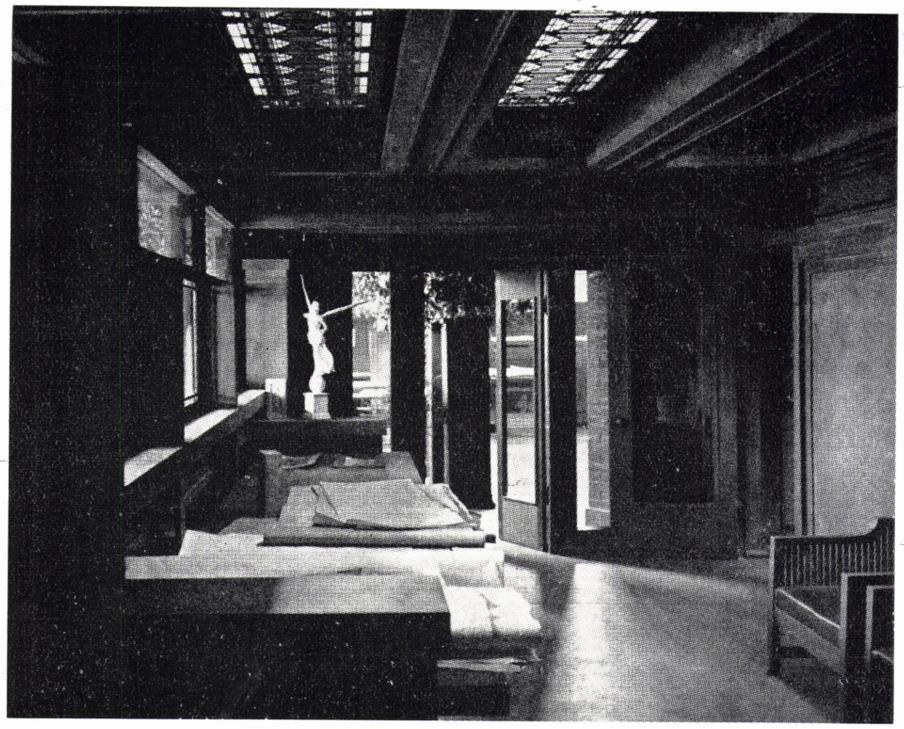








THE CONTINUOUS RAMP IS BROKEN AT EACH TURN OF THE SPIR



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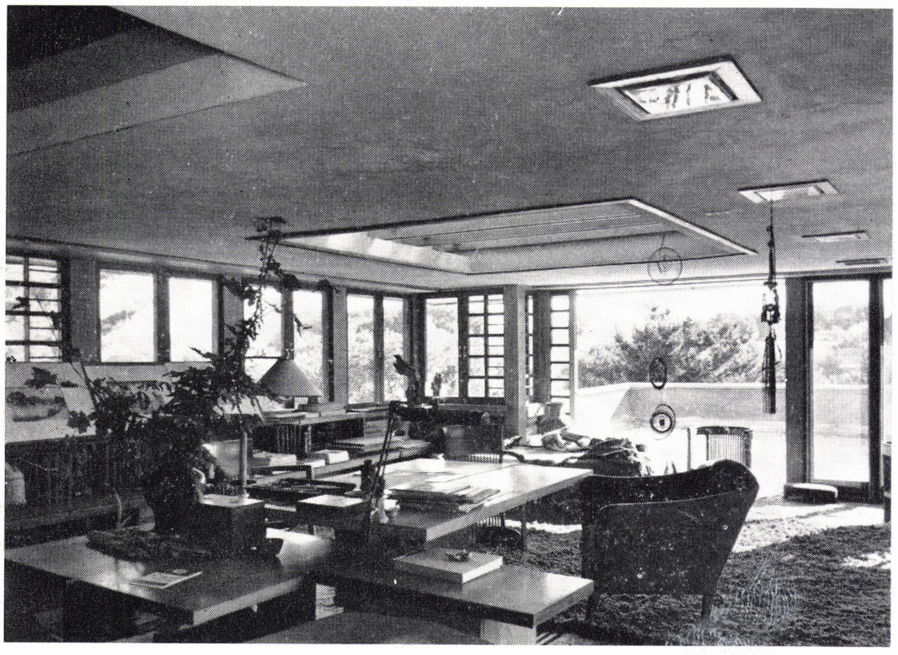

P. E. GUERRERO

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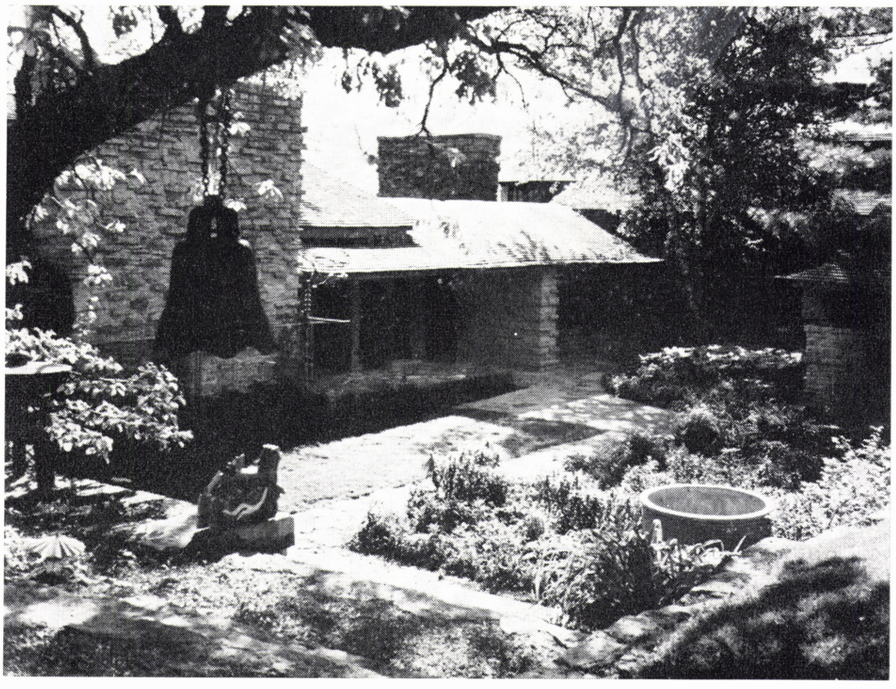


RICHARD MILLER

3

The Taliesins: more than any of Wright's buildings, they are the measure of the man

Among Frank Lloyd Wright's first houses was one for himself, built in 1889. Like his later Taliesins, the little cottage in the Chicago suburb of Oak Park soon began to grow. The first addition, completed when Wright was 25 and his independent practice had been under way only six months, was a studio-office (1). To announce the opening of the studio, he prepared a brochure which contained this statement: "The architect should place himself in an environment that conspires to develop the best there is in him."

No one who has ever been to Taliesin, near Spring Green, Wis., or to Taliesin West, near Scottsdale, Ariz., would say that Wright ever denied that environment to himself or to the hundreds of architect-apprentices who worked and lived at the Taliesins—and who largely built them. There are dates for the beginnings of the two Taliesins (1911 and 1934 respectively), but there are none for their completion, for during Wright's life, they were constantly enlarged, rearranged, and rebuilt.

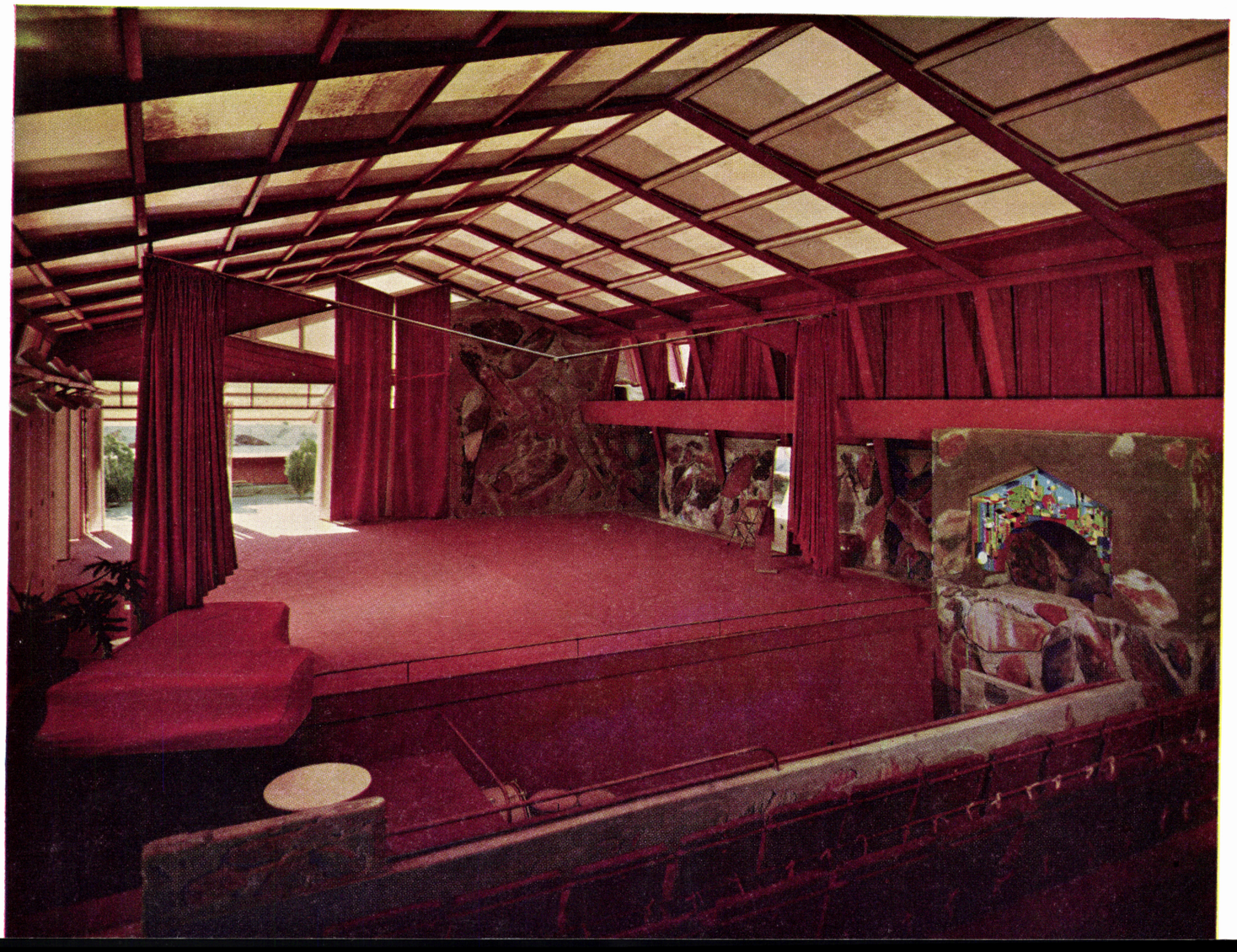
Wright's own favorite workplace, his bedroom at Taliesin (2), is a case in point. Two years ago, the room was enlarged and opened still wider to the pastoral farm lands of Wright's ancestral acres. Indeed, even the studio and center court (3), the only portions of the original Taliesin still left, have been changed countless times in detail—if only in the position of a carved Japanese screen, for example.

Virtually no plans exist for the Taliesins. Taliesin West (shown on the following pages) was laid out by Wright on a sheet of plywood staked into the raw desert ground while apprentices went to work on the heavy stone base. The Taliesins were planned in Wright's eyes and detailed with a wave of his cane. More than any of his buildings, they are the measure of the man.

T

TALIESIN WEST. ABOVE: A STONE PYLON MARKS THE ENTRANCE TO THE CAMP. BELOW: LIVING ROOM IN ITS LATEST FORM.

THE NEW THEATER. ABOVE: REDWOOD BENTS ECHO THE MOUNTAIN'S RUGGED FORM. BELOW: INTERIOR VIEWED TOWARD THE STAGE



T

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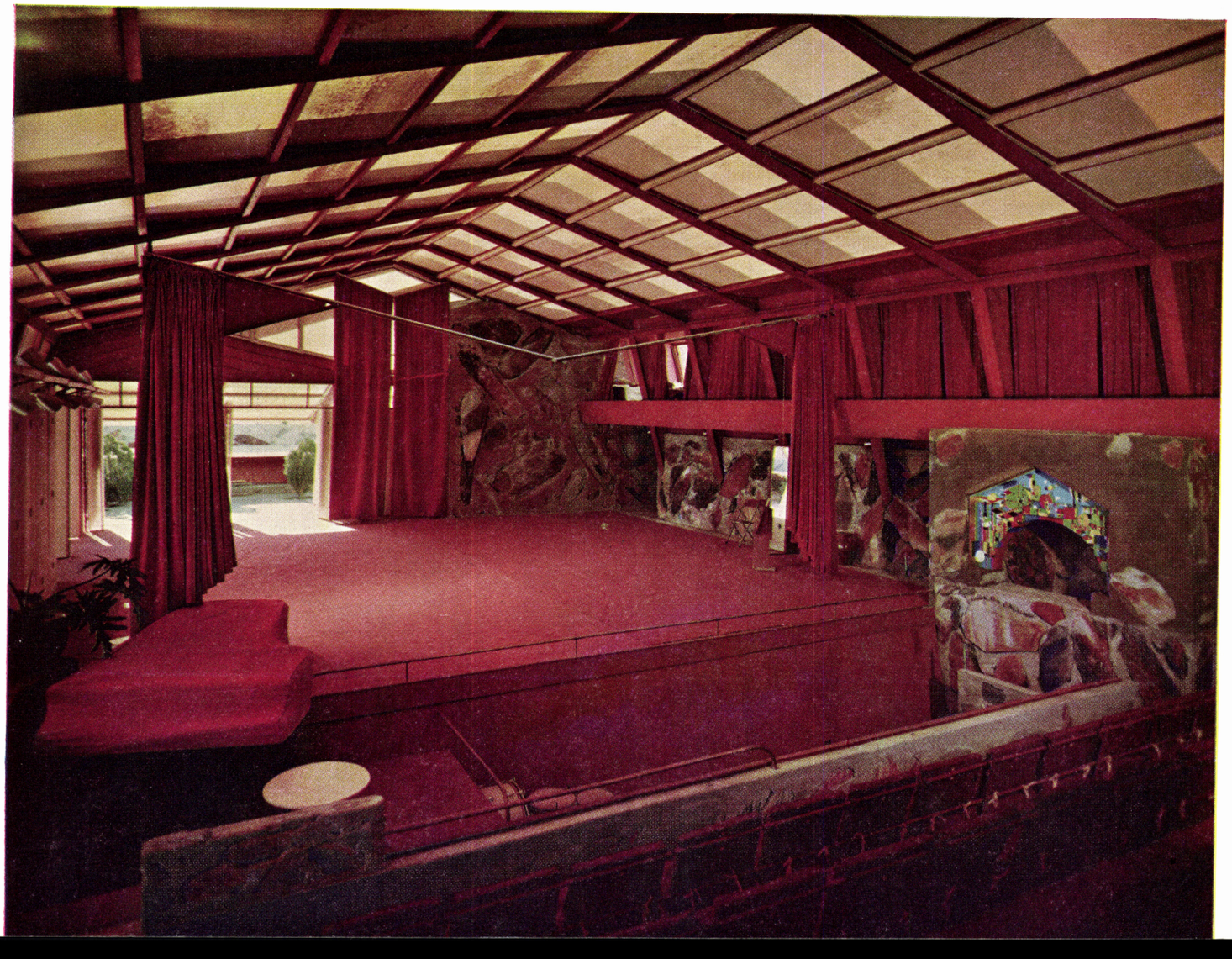


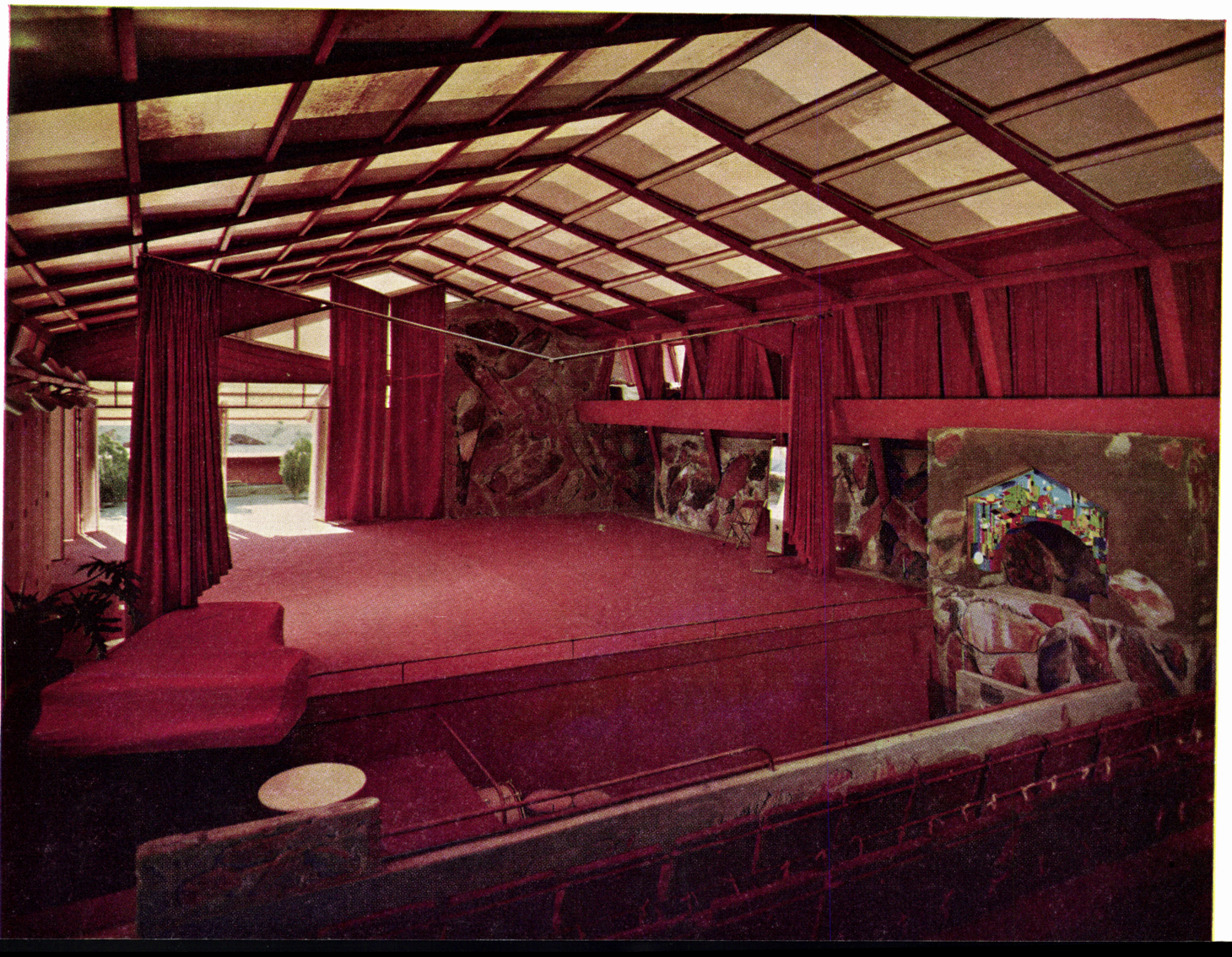
TALIESIN WEST. ABOVE: A STONE PYLON MARKS THE ENTRANCE TO THE CAMP. BELOW: LIVING ROOM IN ITS LATEST FORM.

)NCRETE BASE RAISED ABOVE THE DESERT FLOOR. ENTRANCE AND NEW THEATER AT THE LEFT, LIVING ROOM EXTREME RIGHT.

COLOR PHOTOS : P. E. GUERRERO

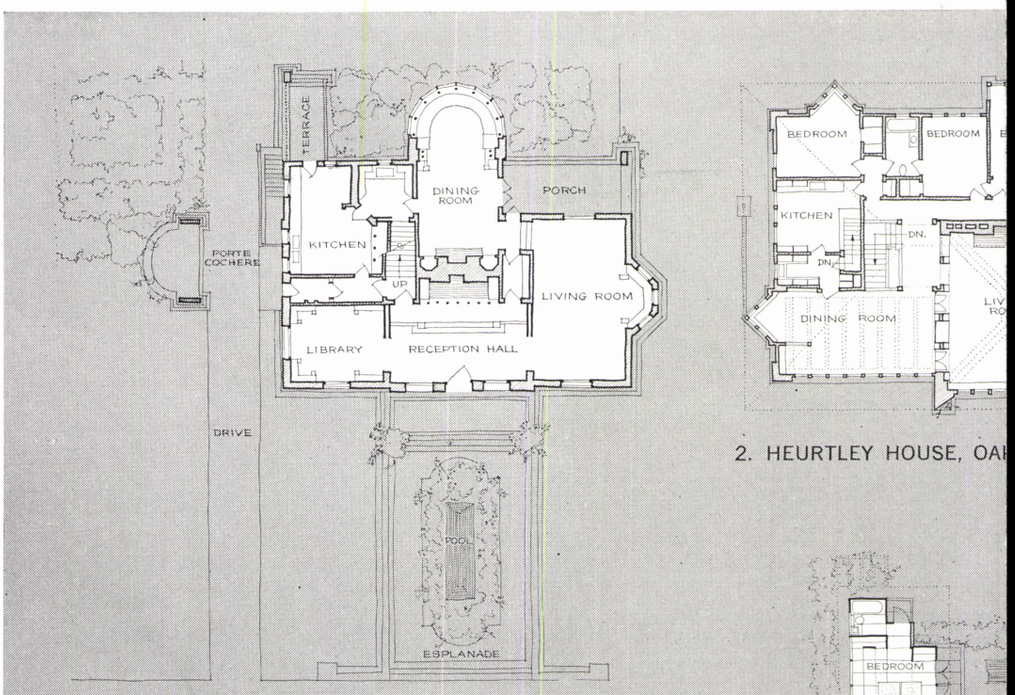
TALIESIN WEST FROM THE NEW ENTRANCE ROAD. BROAD PLANES OF CANVAS HELD IN REDWOOD FRAMES. A STRONG STONE AND CO

THE NEW THEATER. ABOVE: REDWOOD BENTS ECHO THE MOUNTAIN'S RUGGED FORM. BELOW: INTERIOR VIEWED TOWARD THE STAGE



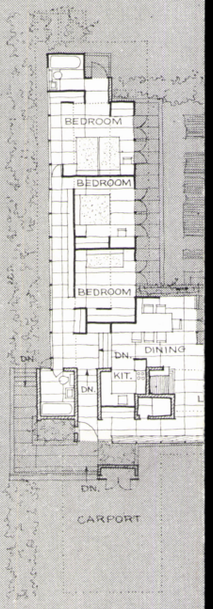
Demolishing the box: the evolving patterns of Wright's house plans over 60 years

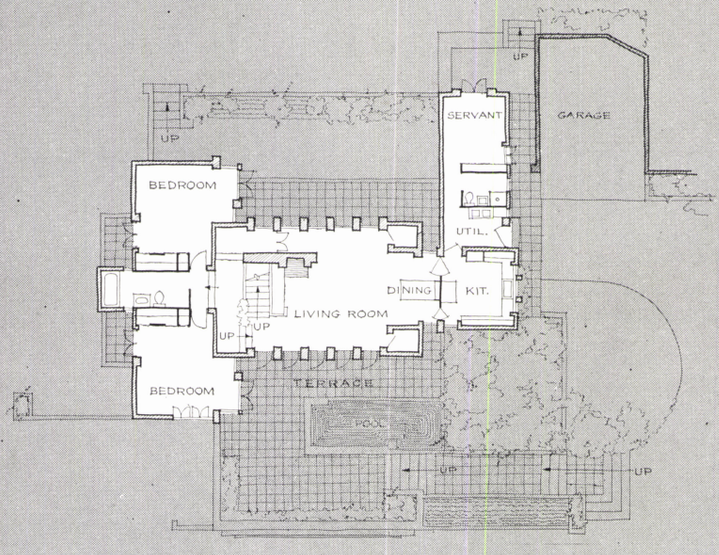
Though Wright's larger projects have had their impact around the world, he will probably be longest remembered at home as the author of the modern American house. As far back as the Winslow House of 1893, Wright had started his lifelong attack on the formal limits of the box. At first he began to open up the traditional, axial plan toward the central fireplace and the garden at the rear (1). Soon living and dining spaces began to flow together, and walls were separated into continuous windows and solid masonry masses (2). Rooms started to merge around the fireplace and reach out onto deep covered porches; outside walls became more freely and strongly articulated (3). By 1916, the separate functions of a house were expressed in frankly asymmetrical plans (4). The twenties brought new emphasis on the modular grid and clearly separated zones (5). In the Usonian houses of the late thirties, the basement and attic had gone for good; the house hugged the ground on a radiant-heated concrete mat; kitchen, fireplace, and utilities were grouped in a central service core (6). In another, larger Usonian house, changing floor levels began to define spaces, and rooms and balconies were raised and strung out along a river (7). Then Wright broke away from the right angle itself. In houses based on hexagons, space wandered freely in and out around heavy anchoring shapes (8). A remarkable bachelor's retreat was designed entirely in circles (9). In 1942, Wright molded adobe into arcs, enclosing a small green oasis on the Texas prairie and echoing in plan the swirls of drifting desert sands (10). Ten years later he took the circle all the way, in an up-spiraling desert house for one of his sons (11). And recently, for another son, he completed a house of ellipses (overleaf).



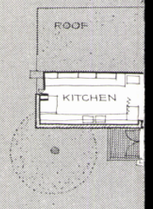
1. WINSLOW HOUSE, RIVER FOREST, ILL. 1893

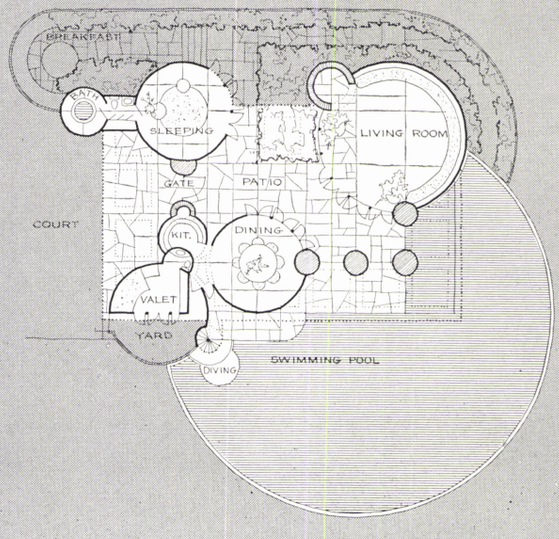
2. HEURTLEY HOUSE, OA





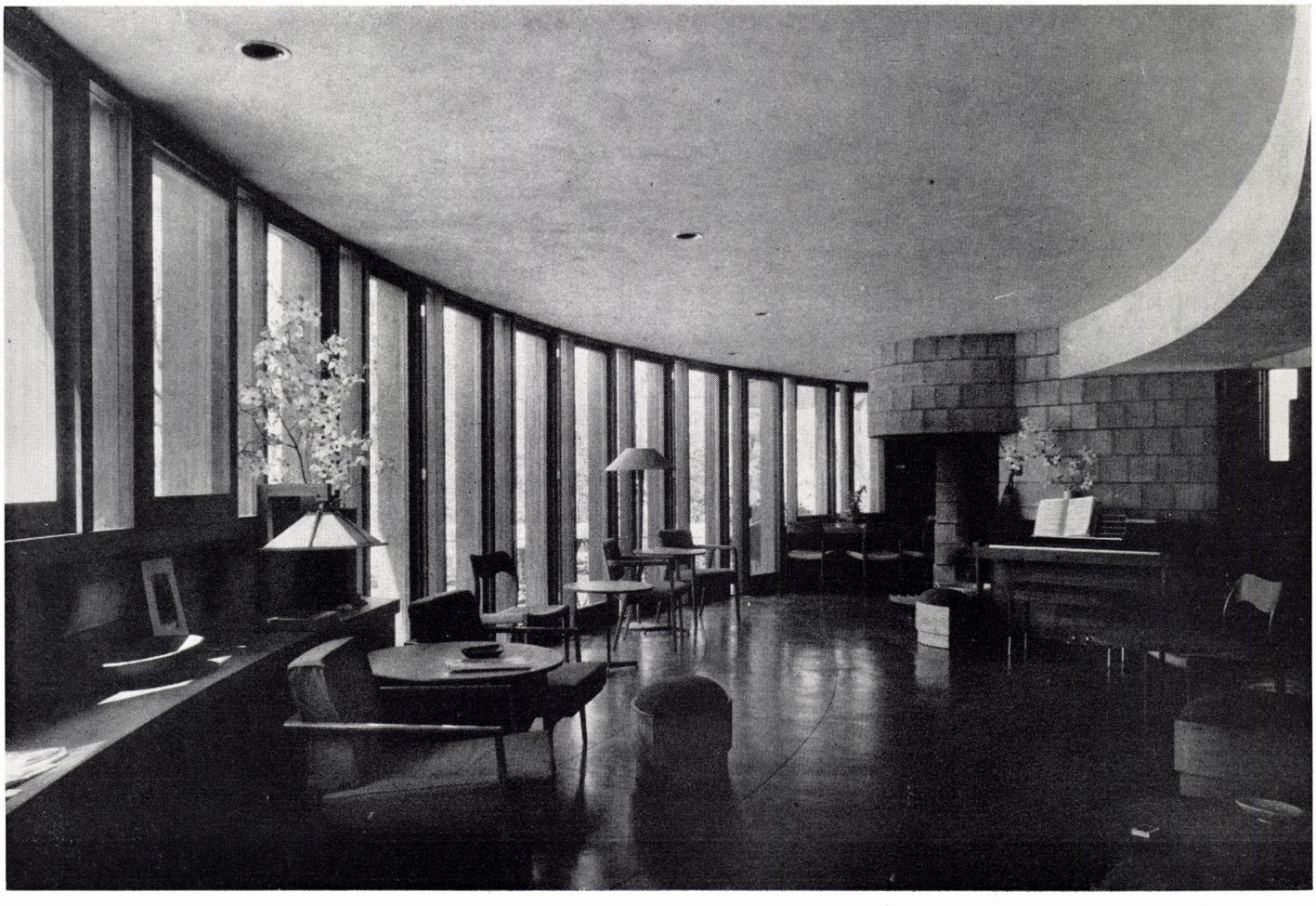
5. STORER HOUSE, LOS ANGELES. 1923

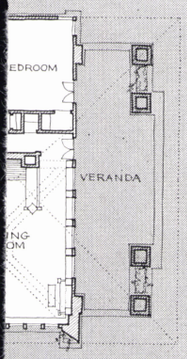




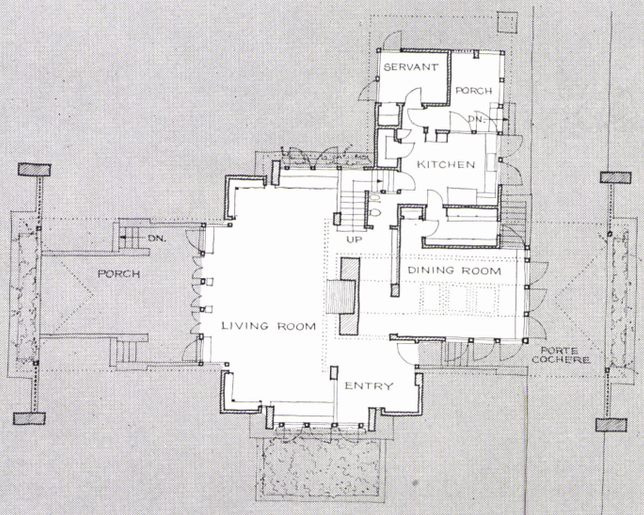
9. JESTER HOUSE, PALOS VERDES, CALIF. 1938

-STORY DESIGN REACHES OUT IN SWEEPING ARCS AND CIRCLES ABOVE A WILDLY WOODED RAVINE NEAR BETHESDA, MD.

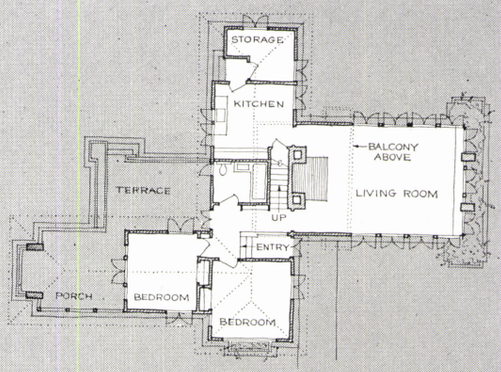




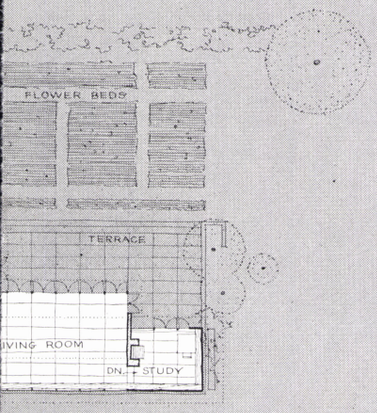
K PARK, ILL. 1902



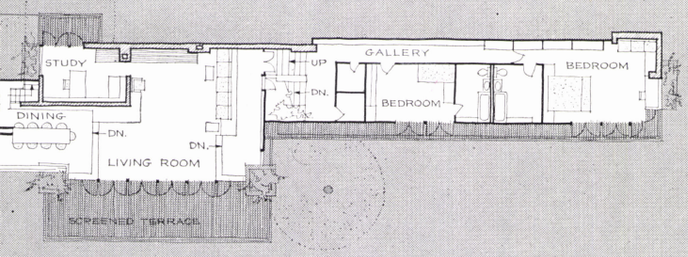
3. EVANS HOUSE, CHICAGO. 1908



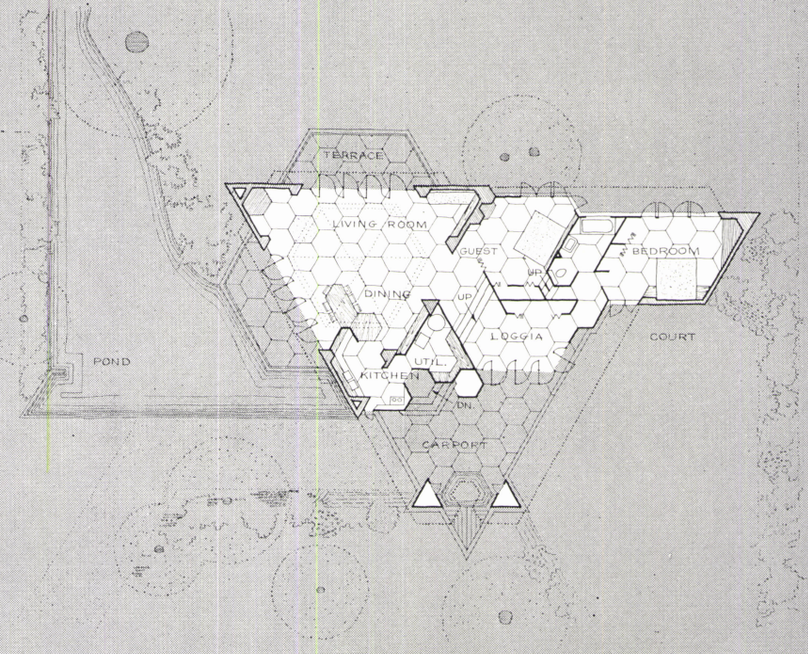
4. VOSBURGH HOUSE, GRAND BEACH, MICH. 1916



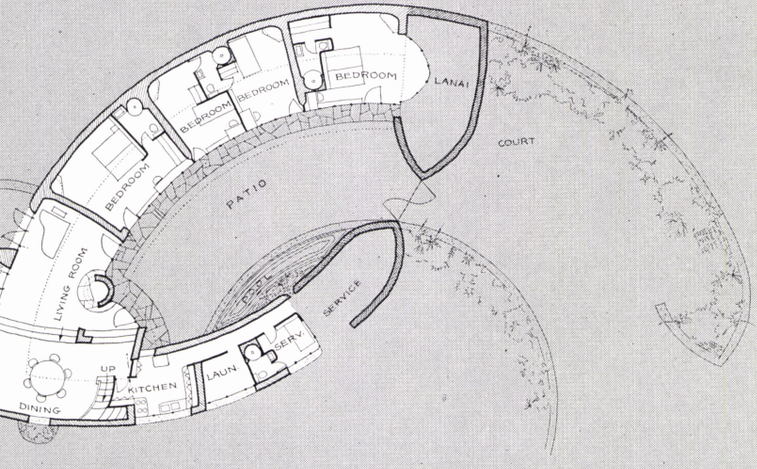
6. ROSENBAUM HOUSE, FLORENCE, ALA. 1939



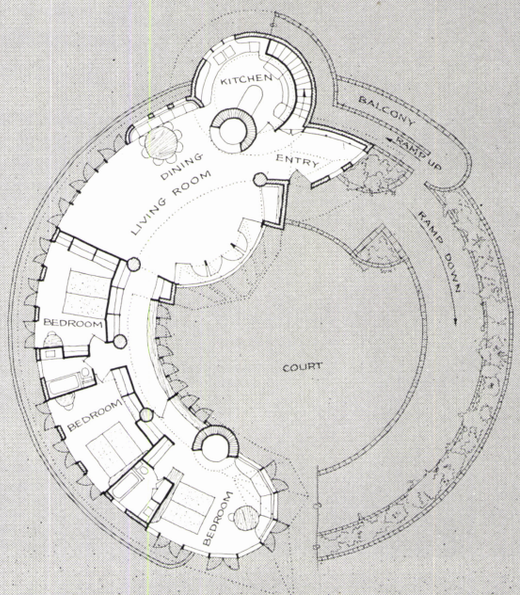
7. LEWIS HOUSE, LIBERTYVILLE, ILL. 1940



8. SUNDT HOUSE, MADISON, WISC. 1942



10. BURLINGHAM HOUSE, EL PASO, TEX. 1942

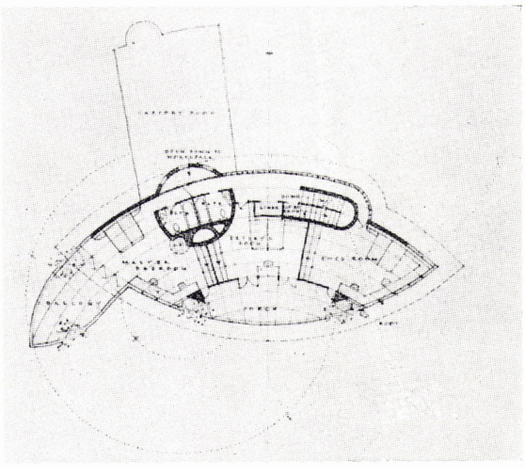


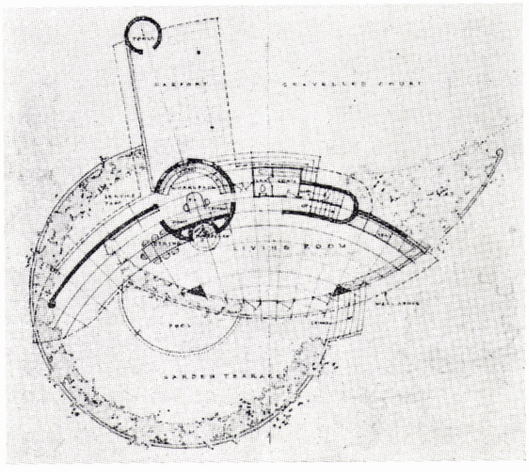
11. DAVID WRIGHT HOUSE, PHOENIX, ARIZ. 1952

ONE OF FRANK LLOYD WRIGHT'S LAST HOUSES, BUILT FOR HIS SON ROBERT LLEWELLYN WRIGHT: A COMPACT, TWO

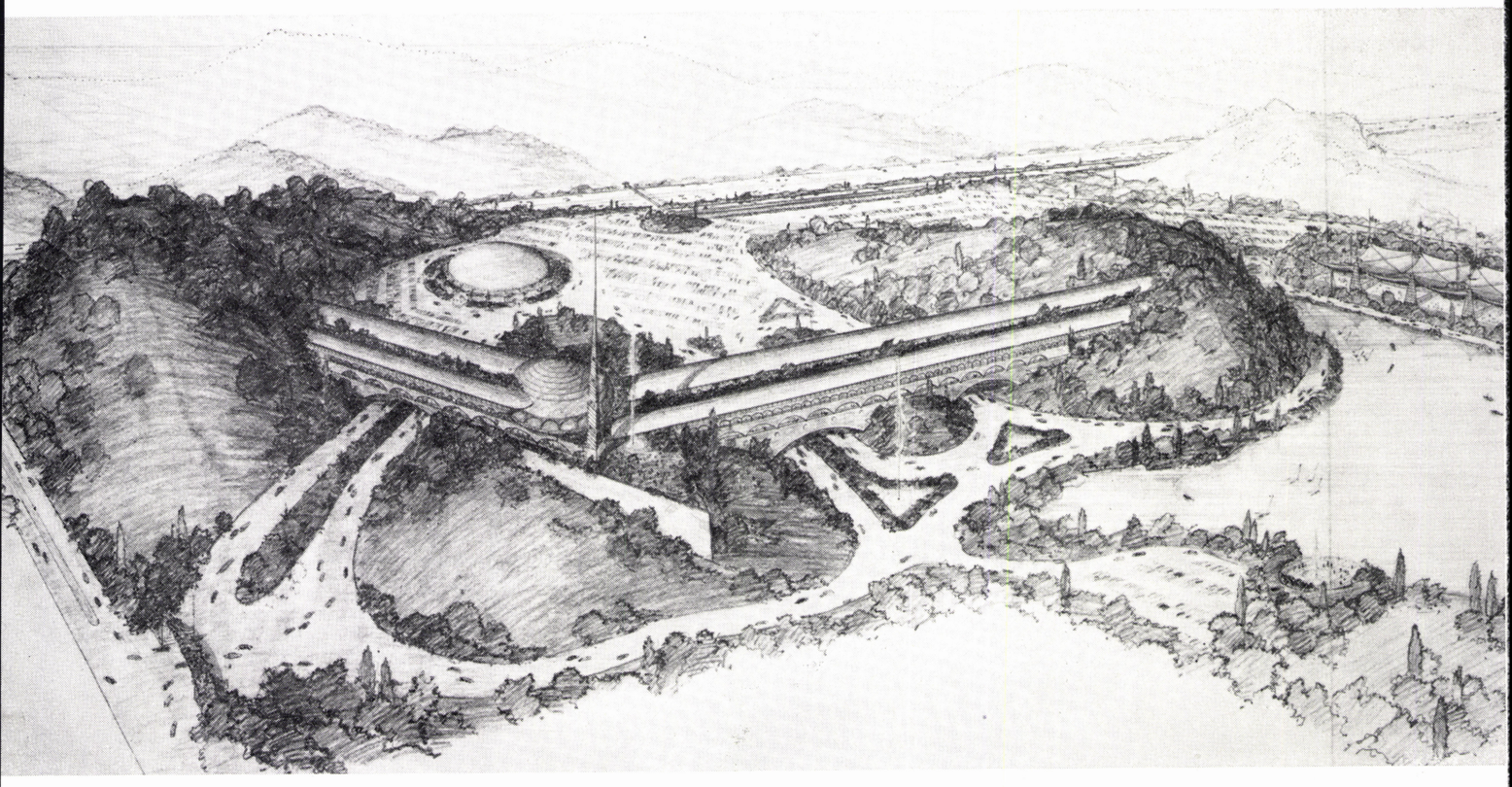
PHOTOS: P. E. GUERRERO

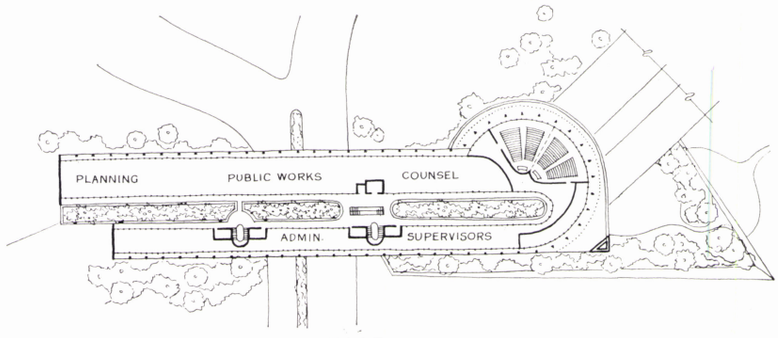
Following the same relentless search for form expressed in an earlier house for his son David (plan overleaf), Wright designed this house of arcs and circles for his youngest son Robert Llewellyn, a Washington lawyer, to fit the slope of a wild and beautifully wooded ravine near Bethesda, Md. A narrow lens-shape in plan, the main living area curves around to take full advantage of the woodland view (plan and photo right). A massive round turret combining kitchen and fireplace rises through the second floor, where it contains bathrooms and a hall which looks down into the kitchen below. On one side is a bedroom for Mr. and Mrs. Wright; on the other, rooms for their son Tim and daughter Betsy. All three bedrooms open onto an elliptical porch sheltered under the curving roof line; the master bedroom also has its own private, prowlike balcony cantilevered out over the forest.





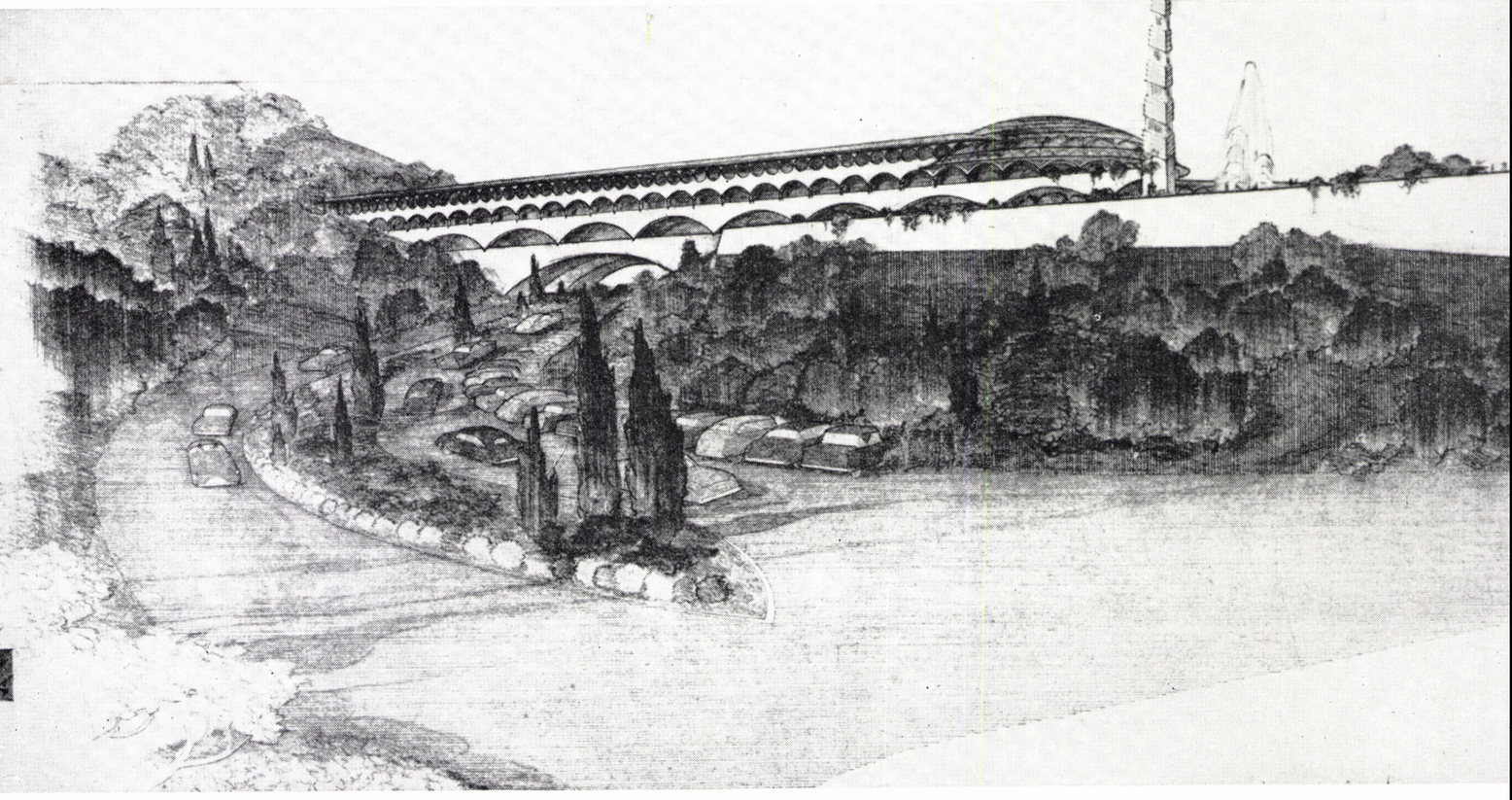
CIVIC CENTER FOR MARIN COUNTY, CALIF.: OFFICE BUILDINGS RESEMBLING GIANT AQUEDUCTS CONNECT THREE HILLS.



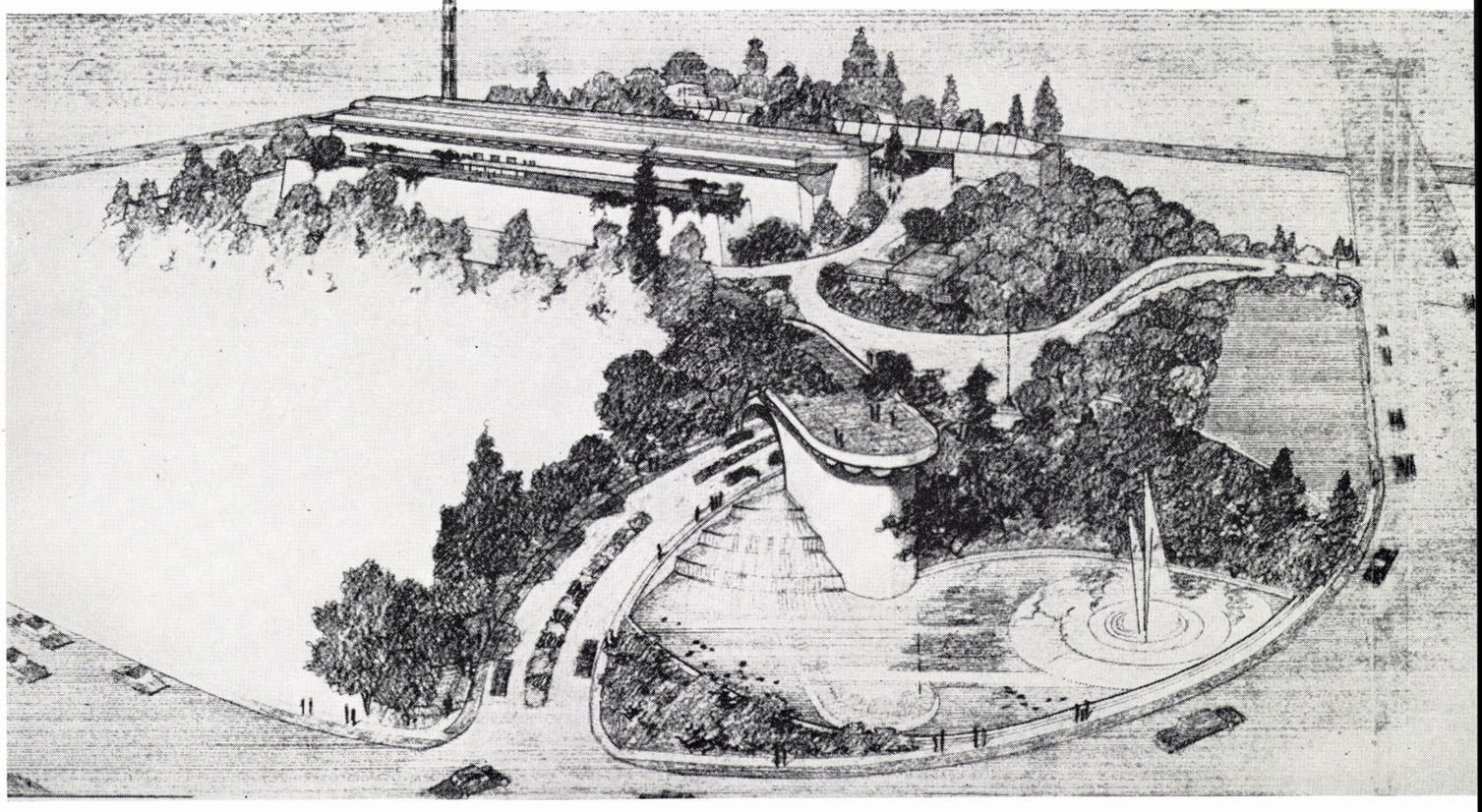


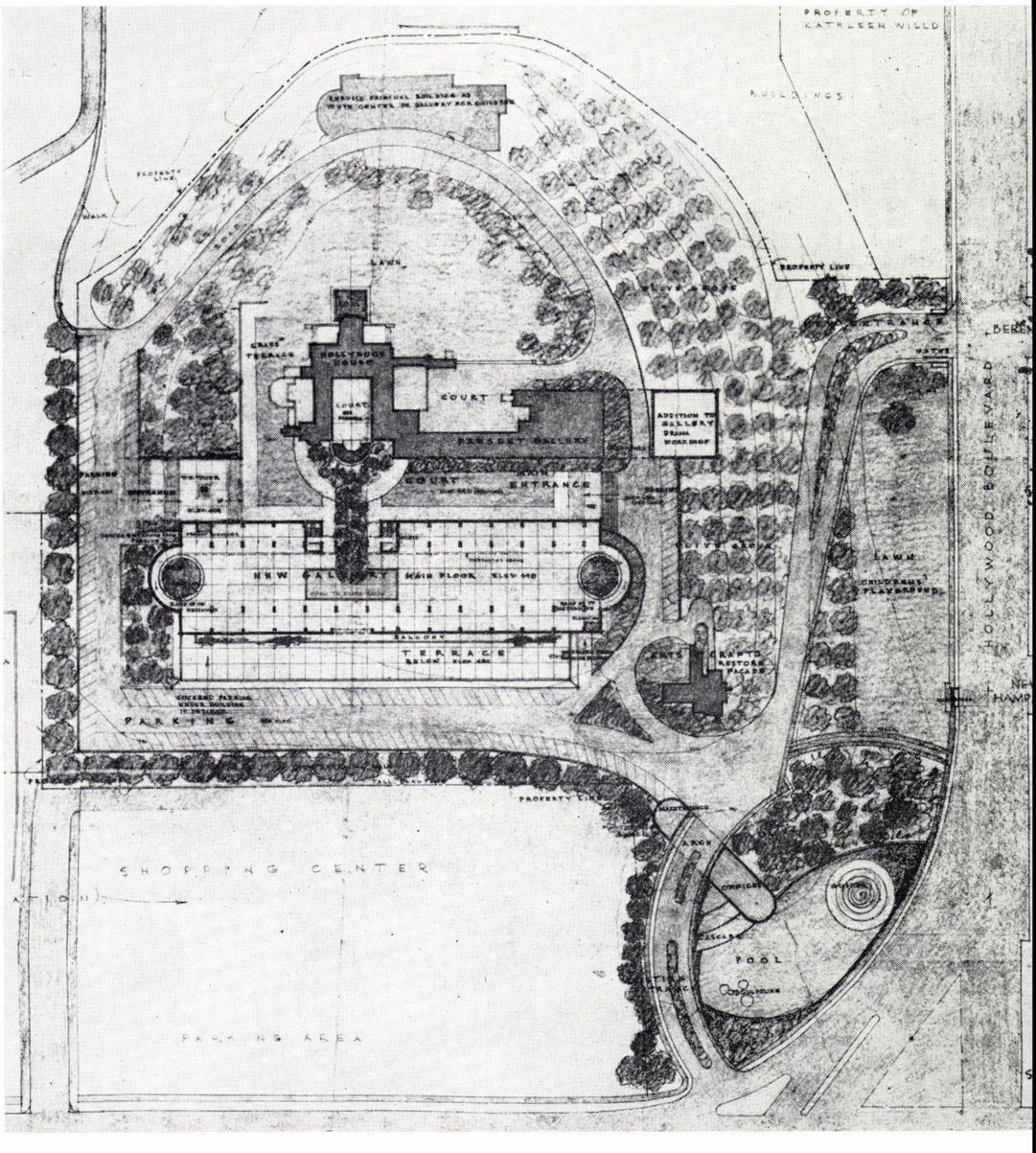
SECOND LEVEL—FIRST STAGE

FIRST



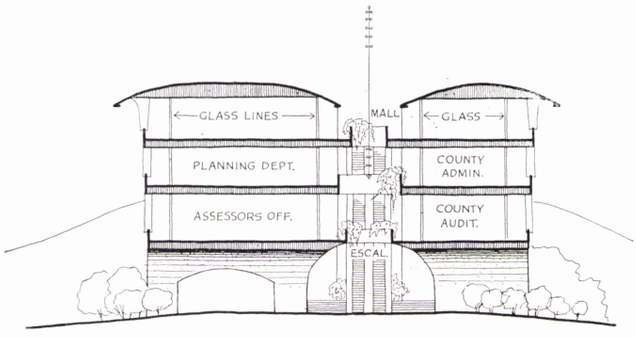
MUNICIPAL ART CENTER, BARNSDALL PARK, LOS ANGELES: FOR HOLLYHOCK HOUSE, A NEW GALLERY, ARCH, AND POOL.



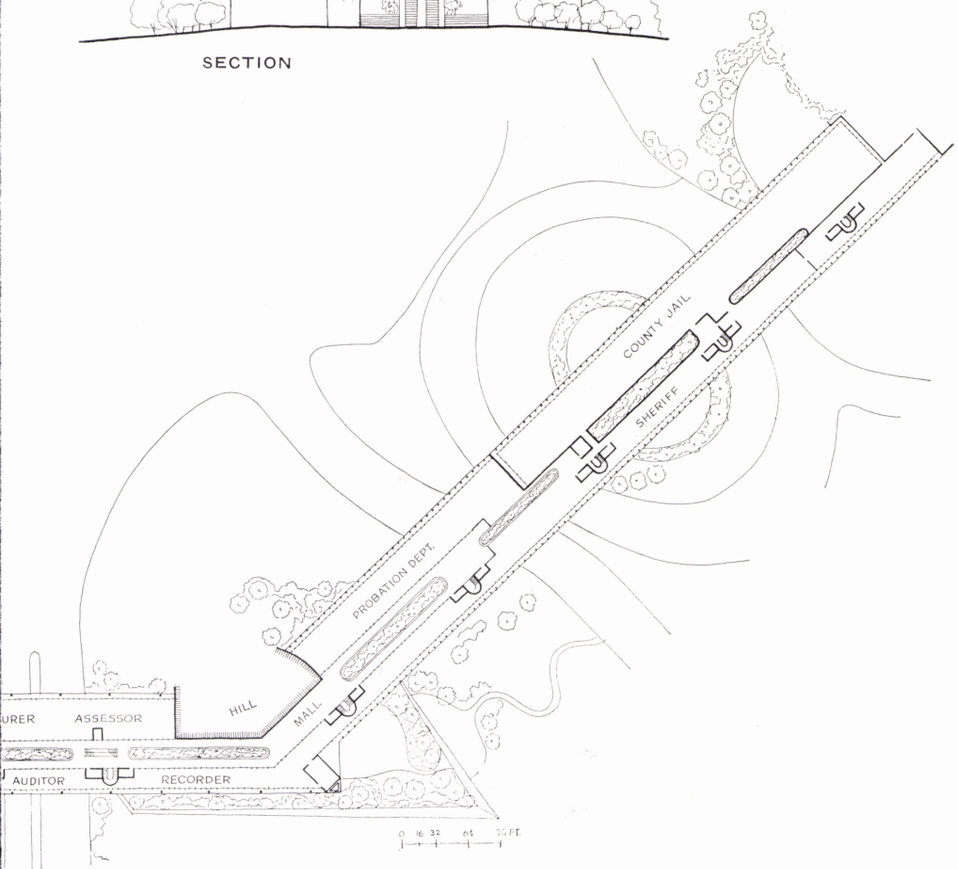


In another project designed by Wright before his death, he expanded his famed 1920 Hollyhock House in Los Angeles' Barnsdall Park into a full-scale municipal art center (above and right) with a large new three-level gallery, a bridgelike entrance structure, and a cascade pool. Wright's architect son, Lloyd Wright, will carry out the $2.5 million scheme, which awaits approval by the city and the raising of private funds. Original house and existing art-gallery additions are shown in dark gray.

CARS CIRCULATE UNDERNEATH TO PARKING LOTS AROUND AN AUDITORIUM, A COUNTY FAIR, AND A NEW PLAYLAND LAGOON.



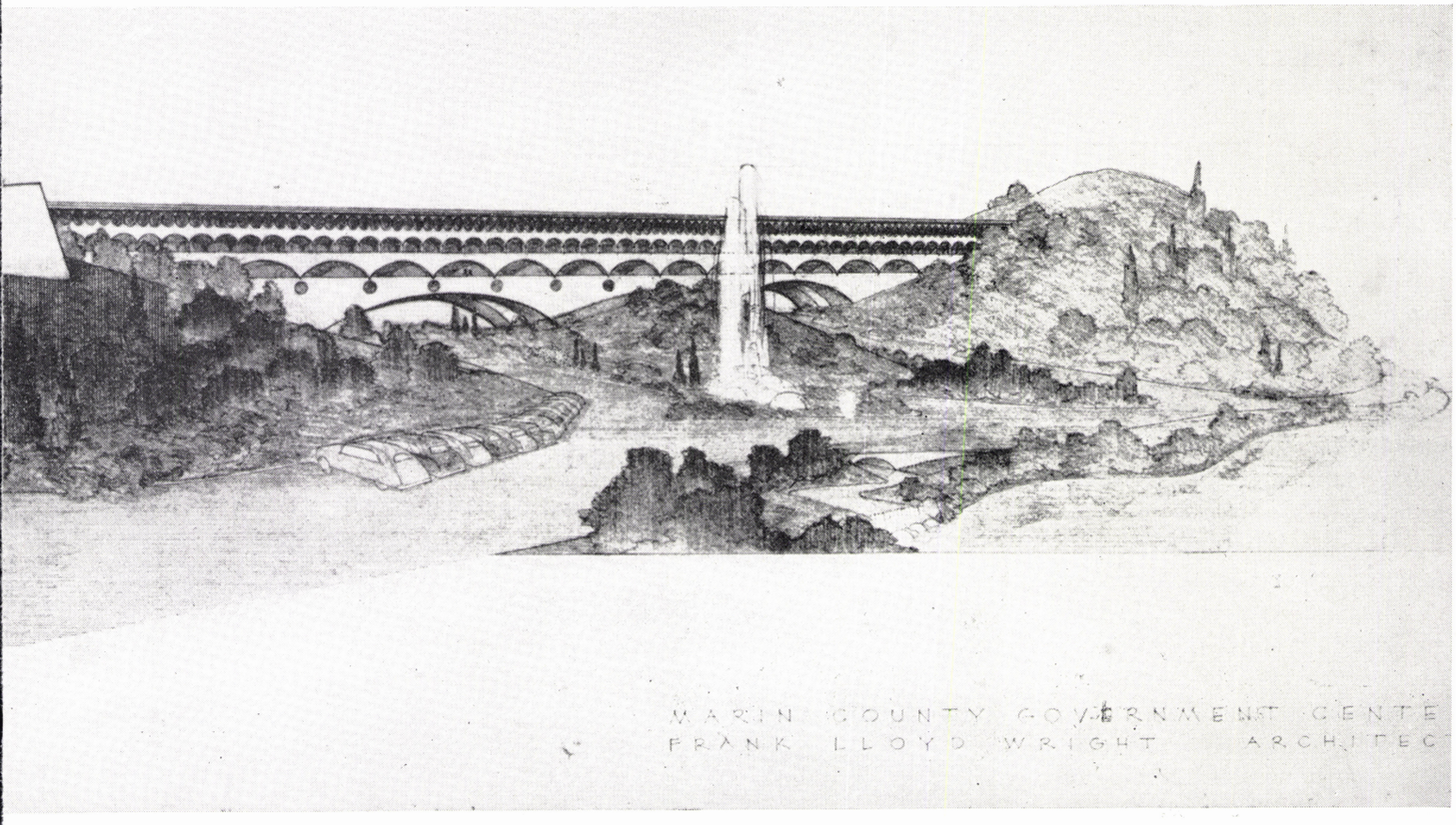
SECTION



LEVEL—FIRST STAGE

THIRD LEVEL—FINAL STAGE

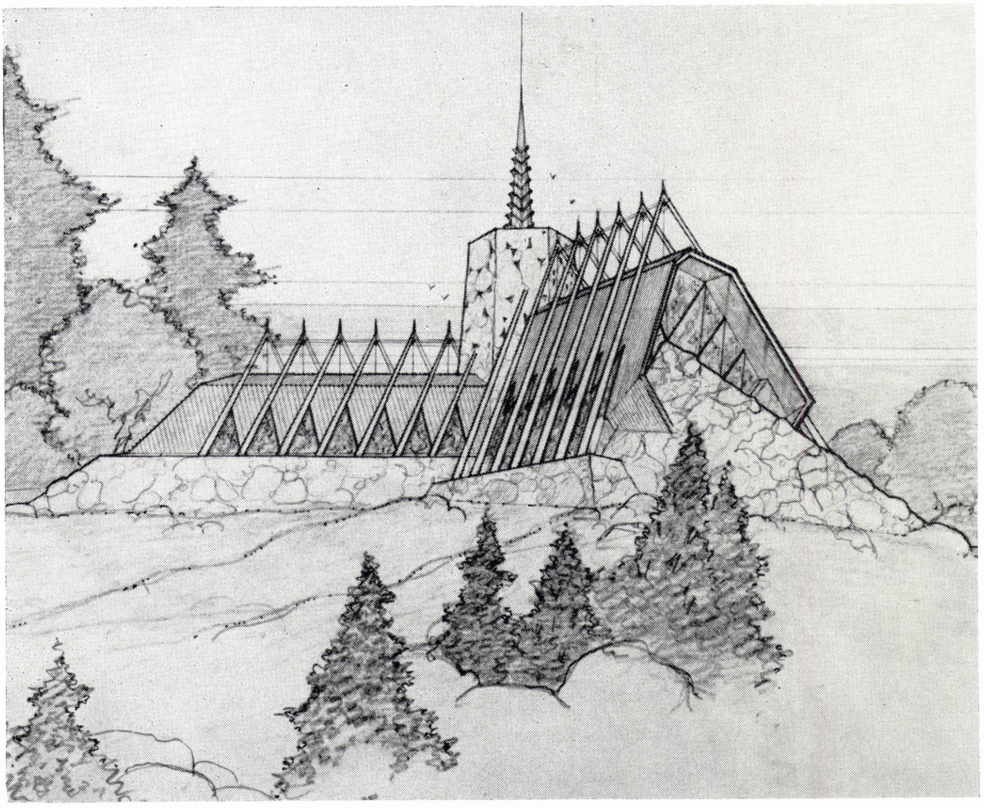
This spectacular design for an $8 million Marin County civic center just north of San Francisco could become one of the largest Wright projects ever built, and the first major one financed by public funds (the civic center for Madison, Wis., would run it a close race). On a 139-acre site off Highway 101 in San Rafael, two government buildings resembling giant Roman aqueducts would unite three hills. The $1.8 million first stage would house county departments in offices linked by central landscaped malls open to floors below and above (section left, plan far left). A $1.4 million second stage, for which preliminary plans have also been approved, would top the first building with a library floor, a domed reading room replacing the summit of the hill, and a 300 ft. antenna and view tower reached by a spiral stair. Subsequent stages would include county courts, legal offices, and a jail in a second bridge-building (plan left), an auditorium, a county fair pavilion, and an amphitheater and other attractions around a lagoon dredged to supply fill for low areas.

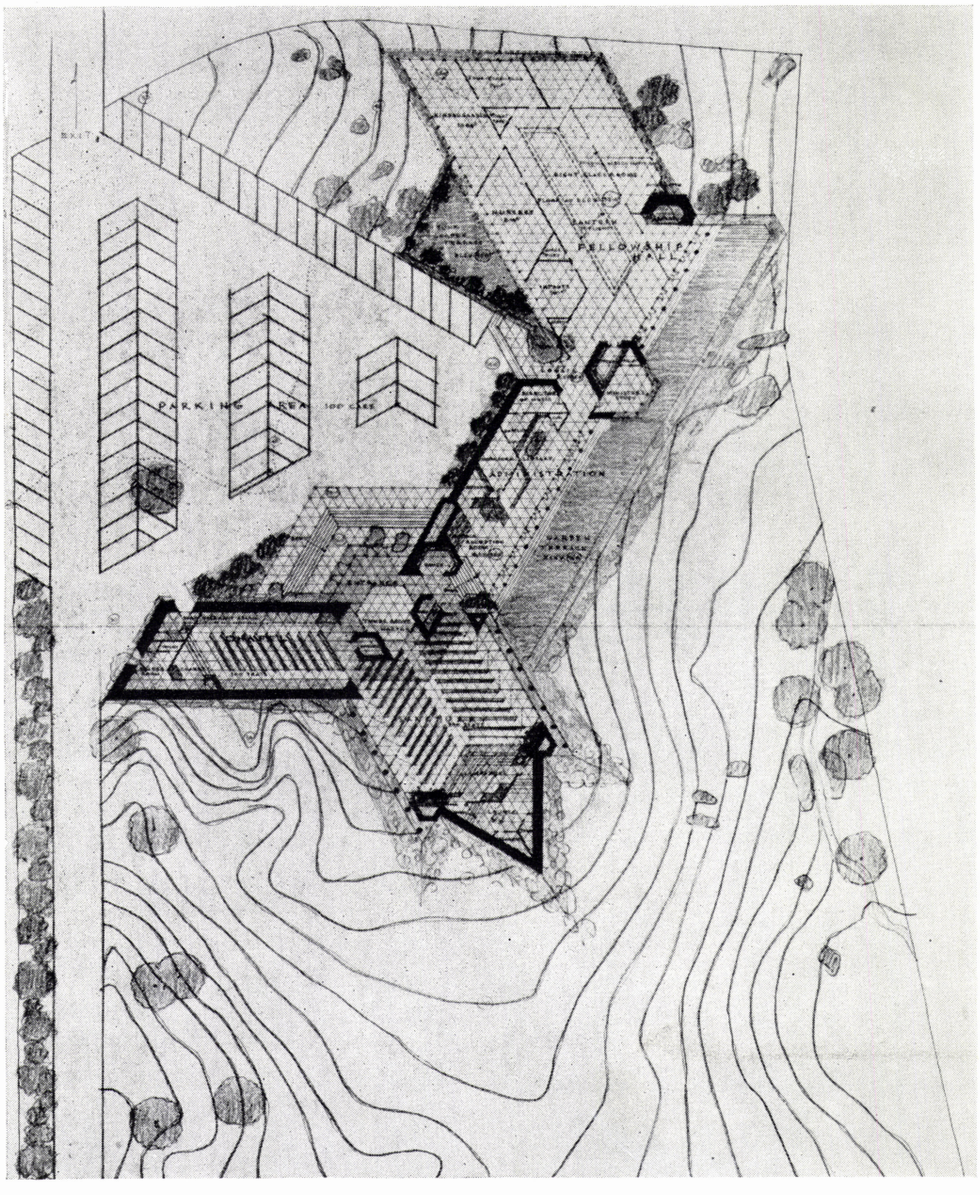


Unfinished work: three of the many projects to be completed by the Wright organization

When Frank Lloyd Wright died, he was immersed in more projected work than at any time during his long and incredibly productive career. Three of the latest projects are shown here: a church, a municipal art gallery, a civic center. They are significant of the increasing number of community projects commissioned to Wright in recent years, and of the inventiveness and practicality of a mind that did not cloud with age. There is little doubt that these and other buildings will be carried smoothly to completion by the organization Wright left behind him.

The design for the new Pilgrim Congregational Church in Redding, Calif. (above and right) is as remarkable in its own way as Wright's famed Unity Temple in Oak Park, his First Unitarian Church in Madison, and the more recent Beth Sholom Synagogue (page 123). In this case the triangle, always symbolic of the Trinity and the aspirations of men, is developed with new richness in plan and elevation. The main sanctuary for 300, a chapel for 100, and an administration wing, all based on a triangular module, come together at a broadly welcoming entrance, above which rises a massive hexagonal tower and the spire traditional to the Congregational faith. Stone walls slant solidly out of the earth as a firm foundation for a light openwork of triangular frames, which support a roof gently folded around the interior space and pierced by triangular windows of colored glass. To one side, classrooms and a fellowship hall open to a long terrace.





To the young man in architecture:

. . . Now to be an architect-at-heart is all right to start with, but you aren't going to get very far with just that. You've got to put the foundation under it, and what is fundamental to the architect-at-heart? What is it he must have? He has to have health, he has to have strength—strength of character most of all—strength of mind, strength of muscle. He has to know life, and he has to know life by studying it. And how do you proceed to study life most successfully and directly? By living it. To live the life that goes with being an architect-at-heart means the study primarily of Nature. Your own nature, of course, is important, because you are going to build buildings some day, I hope, that you can be proud of yourselves, and how are you going to do it unless you are the masters of the thing we call Nature—in yourselves?

Architects are, after all, all that's the matter with architecture. If we had architects, we wouldn't be in the fix we're in now. Just think what would have happened if we'd had an architect on the "Mayflower" who was familiar with organic principles: we would have a great culture now, instead of none. And inasmuch as architecture is the cornerstone of any true culture whatsoever, you young men are much the most important members of this body politic we call the United States of America. And you are the most needed. If you can learn to see into the thing called architecture and learn to build it as you ought to, you'll be the great saviors of civilization in your day. Yours is the opportunity to shape and to determine the shape of things to come. You are shape-hewers and shape-knowers, or you are not architects at heart.

But it takes a long time to make that kind of architect. You can't jump into it. You can't get it by wishing to be it. Unfortunately too, you can't be it by just thinking you are it.

FRANK LLOYD WRIGHT

A talk to the Taliesin Fellowship, April 1959

FRANK
LLOYD
WRIGH

Though a few national business organizations still make headline opposition, a growing roster of local business groups, businessmen, and corporations is providing the steam to make renewal work

Urban renewal and the ambivalent businessman

BY STEPHEN G. THOMPSON

The attitudes of the business community on urban renewal display some of those strange anomalies that make America forever a puzzle to foreign eyes. On the local and individual level, many prominent businessmen and their civic organizations support urban renewal to the full extent of state and federal aid. Indeed, wherever renewal is moving vigorously forward, it is almost invariably sparked by a citizen-business group well aware of the issues and challenge in America's deteriorating cities. On the national level, however, some of the most prominent business organizations, with which most of the individuals and local groups are affiliated, are either dead set against any federal renewal program or for it so reservedly that they create the image of a reactionary opposition.

This ambivalence, however irrational it may appear, has a reasonably simple explanation. The national business organizations for years have been demanding economy in government and a halt to inflation. Invariably, being dominated at the national level by older, conservative members, they have recommended a swath of cuts in federal nondefense spending, including urban renewal, public housing, and other grants-in-aid. But to business leaders back home, many of them of the younger progressive breed, struggling with the economics of modernizing and revitalizing their own communities, it has become increasingly clear that the mammoth job can rarely be done without some form of federal aid program. Many are for all the aid they can get.

Between these two poles, the well-known pragmatism of U.S. business produces all kinds of shadings, propelled by varied self-interests, as to how the big job may be done. A study of these is important for the future. For, as this study will show, more and more individual business leaders, corporation presidents, corporations themselves, and even national organizations are swinging over to create a climate in which the great rebuilding of U.S. cities may proceed apace.

Mixture of nays and ayes

The most recalcitrant of all business organizations on urban renewal, as on many other issues, is the National Association of Manufacturers, which in its latest public pronouncements does not even go along with President Eisenhower's recommendations for continued-but-curtailed federal urban renewal grants. It is for termination of all such grants at the earliest possible date. But the N.A.M. is a phenomenon which not even many of its own members understand, and many businessmen, as will be seen, honor its recommendations more in the breach than the observance.

Nearly as negative in attitude as the N.A.M. is the national Chamber of Commerce of the U.S., which has stated as policy its belief that the federal government should make a planned withdrawal from urban renewal aid over a suitable period, at the same time giving the states appropriate tax sources to carry on. It is adamantly against any further federal financing of public

housing. But, again, many local chambers of commerce have taken action that belies their parent. The Boston Chamber, for instance, budgets $40,000 a year for an urban development department, favors increased federal aid, and takes a leading civic role in pressing for local projects with federal funds. Both New York City's Commerce and Industry Association and the Chamber of Commerce of the State of New York have endorsed federally financed Title I projects. The same goes for chambers in Atlanta, San Francisco, and many cities in between.

Another national organization which has supported federal urban renewal only halfheartedly but is now shifting its views is the Mortgage Bankers Association of America. Last year, instead of repeating its outright opposition to public housing of years past and approval for only a very minimum of federal assistance for redevelopment, M.B.A. forthrightly stated that it "is convinced that large-scale urban replanning and renewal is essential to the growth and development of healthy cities and sound metropolitan areas . . . and is an appropriate concern of all levels of government." Though it would still like to see a gradual reduction of the federal role in favor of the states, M.B.A. also urged two very practical measures to facilitate renewal programs: 1) federal tax code amendment to make it easier to establish "investment trusts" to stimulate greater volume of new rental construction in cities, and 2) authority for local redevelopment agencies to establish "land banks" for the assembling and clearing of blighted land and holding it for an indefinite period without requiring a complete redevelopment plan. This change in viewpoint was inspired, too, by new leaders (see box, page 149) and by local struggles with the problems of reality.

Support moves up

On the border line of supporting organizations is the National Association of Home Builders, which has always been somewhat equivocal about federal urban renewal. Composed mainly of suburban house builders, prospering mightily under VA and FHA mortgage assistance, N.A.H.B. members have never been very enthusiastic about city redevelopment, though never openly against it. Early this year, however, after adopting a typically ambiguous renewal plank* at its annual convention, N.A.H.B.'s President Carl Mitnick went strongly on record before a Congressional committee for a bill going well beyond the Administration's measure in urban renewal funds. What N.A.H.B. cannot support is any public housing provisions, and it still tends to favor remodeling and rehabilitation rather than any new residential building that might cut into its market. Yet even here there are some forthright local voices, such as ex-President Alan E. Brockbank of Salt Lake City, who says urban renewal is "as big as a war," and scoffs at the states alone being able to handle it without massive federal assistance.

Much more clearly for urban renewal, from even stronger motives of self-interest, is the National Retail Merchants Association, which, with its big economic stake in downtown U.S.A., has consistently and actively backed renewal, last year urging no diminution in its local, state, and federal support. And, with an equally big stake in urban real estate and well-being, both the U.S. Savings & Loan League and the National League of Insured Savings Associations have been urging adequate federal funds "to enable this important program to carry on."

Perhaps the most eagerly awaited view on urban renewal is that of the Committee for Economic Development, composed of the country's outstanding business leaders of liberal caste. C.E.D. is in process of making one of its usual thoroughgoing background studies, under an area development committee, before making recommendations. But some hint of its possible basic attitude may be gleaned from a recent emphatic remark by its head, Donald K. David, who finds that "the field of economic policy on the state and local level is a morass of confusion and neglect." And further grist may be found in two early reports of its area development committee: *The Little Economies*, six expert papers on urban problems, and *The Changing Economic Function of the Central City* by Raymond Vernon, director of the New York Metropolitan Region Study. The latter, after careful analysis of the creeping blight that is creating vast "gray belts" in virtually all major cities, ends with this significant paragraph on future trends:

"This leaves two possibilities: that middle-income families may decide to return to the cities in great numbers; or that subsidized government intervention, such as low-income housing or open-space projects, may be expanded to such levels as to constitute a significant space-using force [in cleared slum areas]. The first possibility would fly in the face of deep-seated historical trends, based on powerful sociological forces. The latter demands a scale of intervention much larger than any heretofore contemplated."

Forces at the grass roots

The single most divisive issue in urban renewal, which cuts across and confuses nearly all business organization attitudes, is public housing. Many conservatives oppose all urban renewal rather than be tainted with support of such a "socialistic" measure. But even the public housing *bête noire* is growing weaker, for on the civic level it is becoming increasingly difficult to accept federal help for projects that benefit business and private builders while opposing assistance for projects that would help dispossessed low-income families and wipe out evil slums.

The single most unifying issue among nearly all business groups, and one with which even the so-called socialistic planners will warmly agree, is that to the greatest extent possible urban renewal should be carried forward by local initiative and by city, state, and private funds. The job is of such magnitude that all possible resources must be mobilized, and the private area, where it is alert to its opportunity, provides a dynamic that renewal cannot well do without. The first and most notable example of this is Pittsburgh's famous Golden Triangle rede-

*Said the tortuous, wordy "policy statement" adopted at N.A.H.B.'s annual convention in Chicago in January: "The fundamental purpose of urban renewal is to renew blighted areas to their maximum beneficial potential to the community. It is time for reorientation to emphasize more practical and in the end more effective modernization and rehabilitation of blighted areas. Government agencies should inaugurate procedures to develop urban renewal projects into units within the capacity of the typical local builder. The unresolved problem of relocation must receive both Congressional and Administrative attention to make more workable the private enterprise solution to this problem."

velopment, created and gestated by a self-starting group of top financial and business leaders led by Banker Richard K. Mellon. And similar plans, without any direct public subsidy beyond using powers of eminent domain to condemn land, are now going forward in Baltimore and Rochester, N.Y.

Elsewhere, business and civic leaders have chosen with increasing frequency the device of quasi-public "redevelopment corporations," tying in with federal-sponsored programs, to encourage and advance renewal and in some instances to extend financial assistance to individual redevelopers. Some of the best known of these are Civic Progress, Inc. of St. Louis; the Old Philadelphia Development Corp.; the Citizens Redevelopment Corp. of Detroit; the Buffalo Redevelopment Foundation; the Newark (N.J.) Economic Development Committee; and the Cleveland Development Foundation. In the latter instance, local business and industrial firms advanced a revolving fund of $2 million, which, through grants to planners and loans to builders, triggered an estimated $133 million in renewal projects.

Beyond this, there is a long and varied roster of corporations and individual business leaders who have shown the real depth of the business community's support for bold and imaginative urban redevelopment programs. General Electric Co. and Sears, Roebuck & Co. have actively participated in programs to stimulate renewal in cities all across the nation. Industrialist Henry J. Kaiser gave major impetus to a vigorous renewal program in Oakland, Calif. by assigning one of his executives, Norris Nash, to devote full time to organizing the city's business interests to sponsor and support it. Inland Steel Co., whose chairman, Joseph Block, is president of the Chicago Association of Commerce and Industry, has established a $1 million foundation at Purdue University to help replan and reconstruct deteriorated communities in the East Chicago steel mill area. Two other Chicago business leaders are nationally known for their renewal and redevelopment campaigning over the years: Holman D. Pettibone, former president of Chicago Title & Trust Co., now chairman of the Central Area Committee, an amalgamation of various downtown business groups for renewal; and Earl Kribben, vice president for civic affairs for Marshall Field & Co.

Perhaps the best expression of this new liberal breed of businessmen, ready to face the necessary job of urban renewal in all its aspects, was contained in last year's special report of the Rockefeller Brothers Fund, *The Challenge to America: Its Economic and Social Aspects*. The report's panel of 17 businessmen, economists, and educators, headed by Thomas B. McCabe, president of Scott Paper Co. and former chairman of the Board of Governors of the Federal Reserve System, had this to say about "the metropolitan problem":

"The investment required to make our cities attractive and healthy places to live has been estimated as running into the hundreds of billion dollars.

"The federal government has assumed important leadership but far more needs to be done. It is also clear that the initiative for coping with urban growth, including urban blight, rests with the localities themselves, and with individuals."

Even more aptly, Thomas F. Patton, president of Republic Steel Corp. and vice chairman of the Cleveland Development Foundation, has summed up enlightened business' responsibilities and attitudes in this area: "In the final analysis, the important thing for the businessman to remember is that there is fundamentally no difference between the value of keeping a business efficient and productive and maintaining a city that way. The businessman replaces outmoded equipment, trains and upgrades his personnel, or else loses out to competition. Likewise, the city improves its streets and services, its buildings and neighborhoods, or else forfeits its future prosperity to other more favorable areas."

About face

MBA PRESIDENT NELSON

It is not often that men change their opinions, or having changed, publicly call attention to their own reversal. Last month, however, Walter C. Nelson of Minneapolis, president of the Mortgage Bankers Association of America, told MBA's eastern region mortgage conference in New York why he now favors urban renewal and urges fellow mortgage bankers to do likewise:

"Mortgage bankers have got to wake up to certain facts of life which, seemingly, they have been ignoring or brushing aside in the hope they will disappear. I refer to a pattern of life which is now well established and which certainly will not disappear. I mean specifically the gathering forces for the all-out attack on ever growing slum areas, blighted neighborhoods—indeed the whole vast field of urban renewal. It will serve no useful purpose to demur and say this is creeping socialization, or something to be avoided. This is the definite wave of the future and we must be a part of it. I changed my mind, and I hope I can help you to change yours. We must conform. We must adapt ourselves, our activities, and our personnel to a place in this pattern, and become leaders in the field. Too many mortgage bankers are utterly ignoring the very existence of this whole urban renewal development although, in sharp contrast, I hasten to add that some mortgage bankers have been leaders in this respect."

One such "contrast," the best known mortgage-banker advocate of urban renewal, is James W. Rouse, president of ACTION (the American Council to Improve Our Neighborhoods) and a founder of the Greater Baltimore Committee of businessmen sponsoring downtown renewal (FORUM, May '59).

The tricks of architectural space

BY RICHARD A. MILLER

Perhaps the least understood aspect of the great art of architecture is the simple question: how does the human eye see "empty" space?

It is a commonplace of architecture that its essential product is "space." Invariably the first decision of the client relates to how much "space" he will need, and to what kinds. And yet this central commodity of architecture, space, is paradoxically enough the one that is least often examined systematically. The physical dimensions are established easily enough. The quality of a space, the way the space "feels," is something else, and it depends first of all on how space is seen.

The perception of the outside world is relatively easy close up where all the senses operate and where the synthesis of their reports can be checked by some action on the part of the observer. But beyond the reach of the arm, it is not so easy. In fact, in apparent contradiction of the current saying that "architecture is space," space alone cannot be "seen" at all. Space is only seen in terms of the "things" in it. According to Philosopher Alfred North Whitehead, "the suggested procedure [for understanding space] is first to define things in terms of the data of experience, and then to define space in terms of the relations between things."

This is precisely what architects have been doing since the beginning of time, by enclosing space in walls or by punctuating it with columns. To a large degree, this is also what was proved by the classic demonstrations in perception, like the famous "fool-the-eye" demonstrations of the Dartmouth Eye Institute. Despite some of the naïve conclusions projected from the demonstrations (e.g., that the role of previous experience in perception proved the importance of traditional architecture) and despite the continuing questioning of psychologists (e.g., how much of perception is learned and how much is an innate part of the human structure), the basic demonstrations give some important cues to how depth is perceived and how space is perceptually "organized."

Art Professor Hoyt Sherman of Ohio State University, who has done a great deal to relate psychological theories of space perception to art and architecture, recently said: "Space is a judgment. It is perceived in a transaction in which external stimuli, abstracted by vision as cues, are interpreted by past experience, future anticipation, and immediate purpose." The so-called cues are the keys to the transaction. The binocular cue of "disparity," which uses both eyes to localize a position in space, is not particularly influential beyond 20 ft. Beyond that, and in perceiving the close-in environment as a "whole," the influential cues are monocular (or one-eyed). Since the retina of the eye is a two-dimensional screen in monocular vision, three-dimensional space is really perceived by two-dimensional cues.

Although the perception of space requires a continual feed of stimuli which are received and interpreted by man as he moves about in the space itself and, in effect, sees a motion picture of it, the basic cues can be analyzed in still photographs like those that follow.

NEW YORK WORLD TELEGRAM & SUN

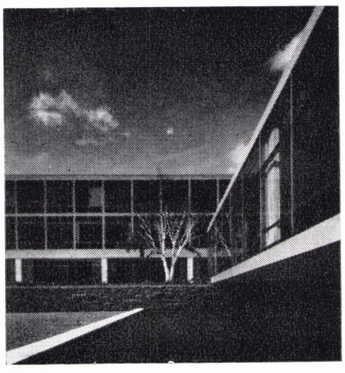
Position

The simplest way of defining space is by means of the relative position of objects in it. Without the towers, this foggy space above Manhattan would be impossible to see in terms of depth or orientation.

TORKEL KORLING

Position

In Frank Lloyd Wright's Johnson Wax building, the columns are positioned on a regular grid on the floor, and they sweep up and out to touch one another at the ceiling. The position of the observer in relation to close-in columns can be used to judge space farther out aided by the regular decrease in column size. Other space cues are minimized by long horizontal lines, curved walls, and glass corners at the ceiling, thus presenting a synchronous, nondistracting environment for work



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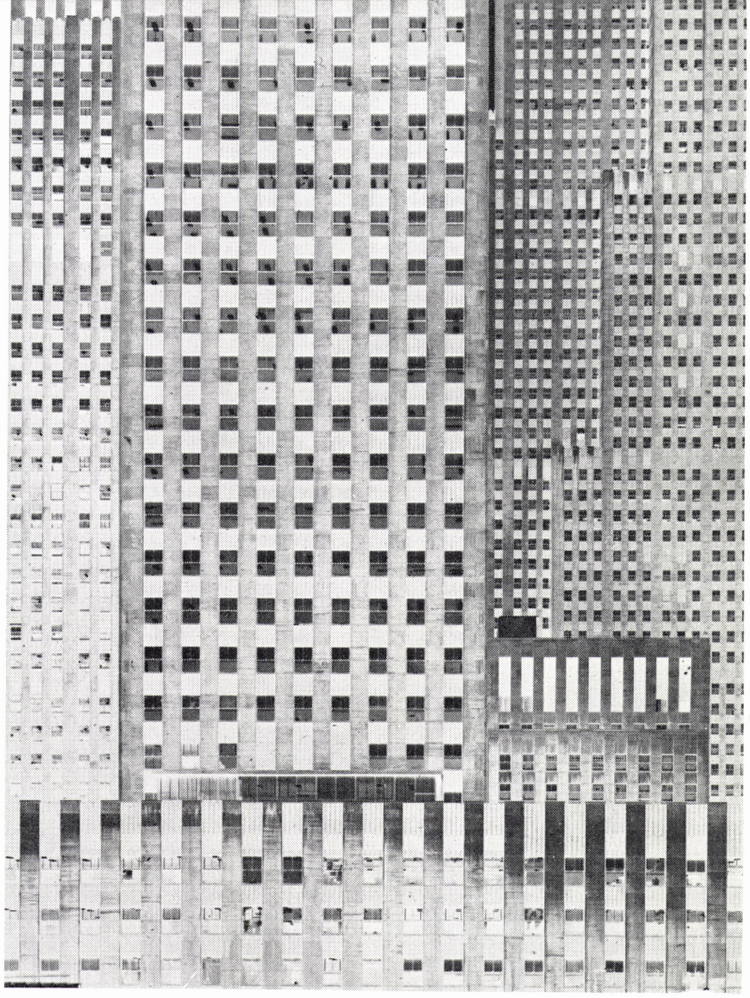
Size and brightness

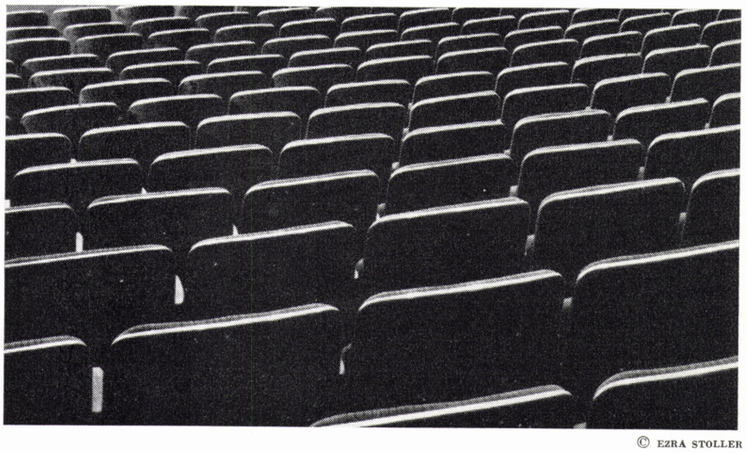
At a quick first look, the right photo in this pair of views of Skidmore, Owings & Merrill's Connecticut General building appears to have been taken from farther away; actually, both photos were taken from the same position. There is a conflict between the space cues given. The brightness of the night-lit windows appears to bring them closer, but their apparently smaller size works even more positively to push them back. Actually, the daytime "window" is window-and-spandrel. At night, only the actual window is bright.



PETER R. PETERSEN

Size and alignment

The relative distance of these Rockefeller Center buildings, all seen head-on, is judged primarily by the apparent diminution (at increasing distances) of the windows, which the viewer subjectively judges equal in actual dimension. In the distant building, the difference in horizontal alignment between windows in the front face and those in setbacks is an additional cue to depth.



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ANDREAS FEININGER—LIFE

Size and overlay

The cues of relative size and "overlay" determine the space occupied by these theater seats. Here, overlay is simply the way in which the back of one seat overlaps the back of the seat farther forward. If the observer imagined that the seats were cobblestones, the apparent distance would be much less. Psychologist James Gibson describes the method of judging "near" or "far" on the basis of "bigger" or "smaller" apparent size in very small things (such as cobblestones) as the "texture gradient" method.

Atmosphere and overlay

Snowflakes (or fog or smoke particles) actually "fill" space, allowing a judgment of depth on the basis of apparent density. The density of the atmosphere increasingly obscures objects that are farther away. In this picture of New York's Fifth Avenue, distance is read also by the overlay of the buildings. Where relatively more of the side of a building shows, one judges that the intervening space between the building and its near neighbor is relatively greater.

Overlay

In contemporary architecture, which includes fewer size and position cues (e.g., smooth glass walls have replaced "windows"), depth perception is heavily dependent on overlay cues. In SOM's Inland Steel building in Chicago, the huge projecting columns have enough depth to provide a clue to the space between them even though the camera viewpoint is very nearly in line with the face of the columns. Smaller columns, more closely spaced, would appear as a flush surface from this point of view.

AARON SISKIND

Overlay

The off-the-right-angle surfaces of the piers in Frank Lloyd Wright's colonnade at Florida Southern College increase the apparent distance between the piers because more of each pier is apparently exposed behind the overlay of the pier in front of it. Wright, widely recognized as a master of architectural space, intuitively used all the various space cues.

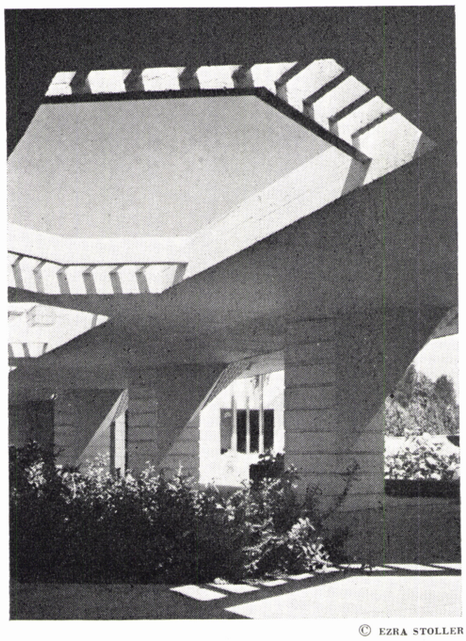

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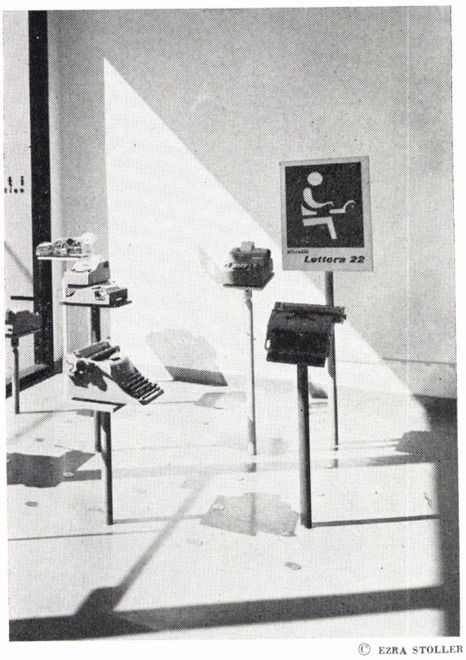
Figure-ground and position

Gestalt psychology suggests that man sees the whole first, the parts later. This instinct leads one to assume that the poster in this typewriter showroom is on the wall because the wall is the anticipated "ground" or environment for a "figure" (in this case the poster). Actually, the poster is on a pipe standard several feet from the wall. The position cue of the column intersecting the floor is not so powerful as the tendency to "put" the poster on the wall.



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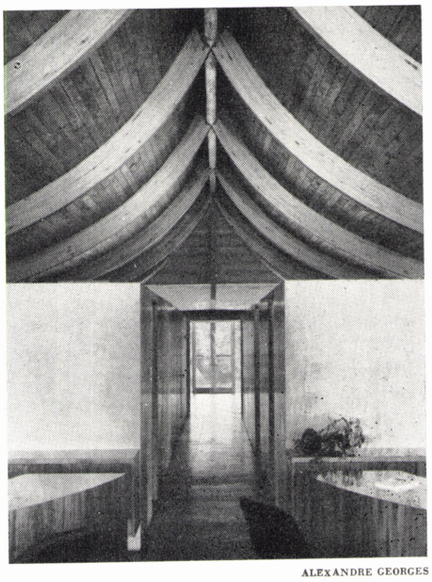
Coincidence of edge

In this picture of Victor Lundy's Chamber of Commerce building in Sarasota, Fla., the curving slope of the roof at the end of the building appears to be closer to the camera because the ends of the hip rafters coincide with the corners of the nearby partitions. What appears to be a flat corridor ceiling is actually a vertical glass wall at the end of the building. Coincidence of edge causes objects that lie at different distances to appear to lie at the same distance. Large objects tend to dominate, pulling the small ones to them.



ALEXANDRE GEORGES

Figure-ground

Until 1940, the pattern of the pavement of the Campidoglio in Rome (photo left) emphasized the actual oval shape of the plaza because the radial lines could be easily read as varying in length. Then, Michelangelo's original design for the pavement was restored (photo, right). The intricate pattern obscures the actual shape, and the viewer is likely to conclude, at first glance, that the area is a circle. The pavement pattern tends also to heighten the slight rise of the pavement toward the equestrian "figure" at the center.

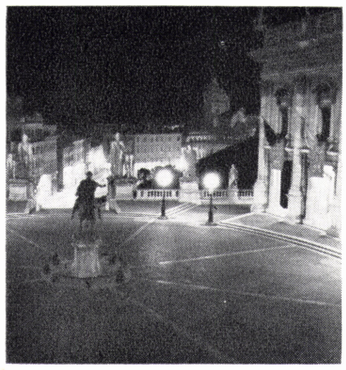
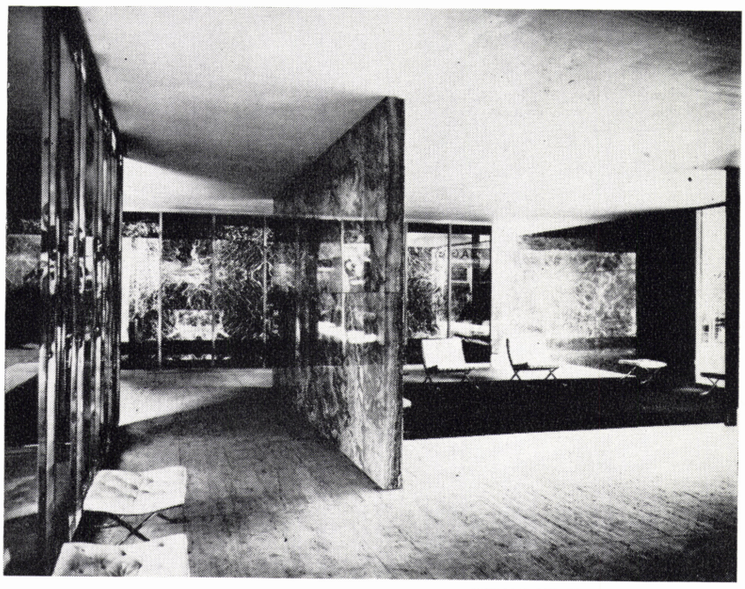


FOTO-ENIT-ROMA

RICHARD MILLER

Closure

The contemporary open plan is a product of the recognition that man moves through space. Pioneer architects like Mies van der Rohe realized that space could be closed incompletely by walls, leaving the rest of the job to the occupant's innate tendency to provide closure. In the interior of Mies's famed Barcelona pavilion, the occupant had many closure choices available as he moved around the space. This choice is one of the "freedoms" of modern architecture.

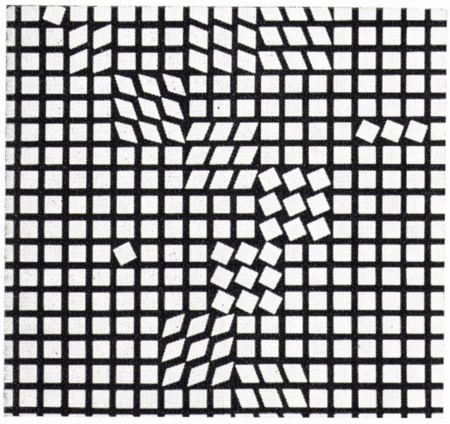


COURTESY MUSEUM OF MODERN ART, N. Y.

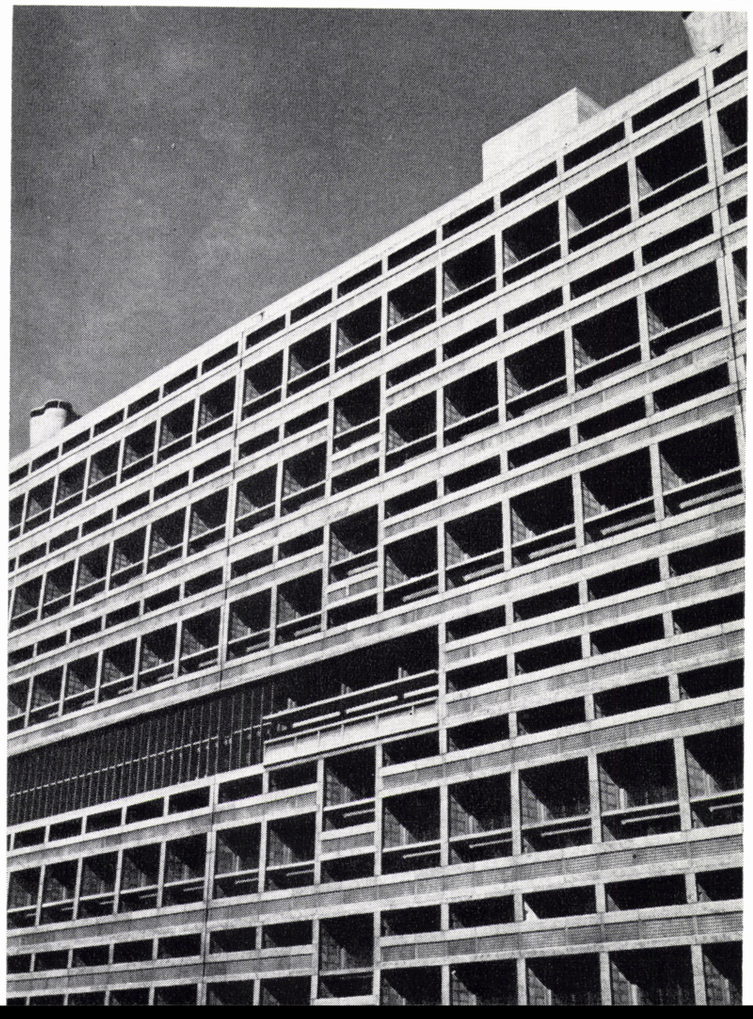
Continuation and alignment

In an advertisement for the Italian art periodical Quadrum (photo, below) the disturbing "movement" of the groups of diamond shapes occurs because of conflicts in organization. With great concentration, one or more of the groupings can be brought to apparent rest, but only for a few moments. These conflicts do not exist in Le Corbusier's Marseilles apartment building (right) despite variations in pattern because vertical and horizontal alignment and continued lines maintain overall organization.

OLIVETTI CORP. OF AMERICA



LUCIEN HERVE



Summary

The cues to depth perception illustrated are position, relative size, relative brightness, and overlay. The cues to space organization are coincidence of edge, figure-ground, closure, continuation, and alignment.

Is real estate an inflation hedge?

Some popular notions about real estate investment are shaken by a look at the facts —and what some of the economists have to say

BY FRANK FOGARTY

One of the hardy perennials of investment theory is the notion that real estate is a sure-fire hedge against inflation, that money put into any kind of real property is bound to increase at least as fast as rising prices. The notion flourished in the twenties, and it has bloomed brilliantly again in the last decade as one round of inflation followed another. A current best seller, William Nickerson's enthusiastic *How I Turned $1,000 into a Million in Real Estate—in My Spare Time,* declares flatly for the theory. And such advertising tag lines as this from a recent New York paper have again appeared: "Land is your best inflation shelter!" Even some experts have nodded approval and implied that real estate investment is bombproof protection against rising prices, and their endorsement has made the theory's revival all but complete.

Such thinking is inevitable, perhaps, in times of boom, but its reappearance is disturbing. Granted that there is basis for saying that real estate can be an inflation hedge, for many investors have proved it and profited handsomely in the bargain. But the fact remains that there is no more truth in the theory than there is in any economic generalization. Real estate cannot offer sure inflation shelter on every corner to every one. And to imply that it can, as opportunists have, is not only to mislead but to invite the sort of excessive investment and build-up of prices which occurred in the twenties when once before real estate was oversold to the public.

Actually, as any economist will testify, real estate investment always involves some risk, just as there is chance in playing the stock market or starting a new business. As such, realty should be a field for risk-takers, preferably experts who know when and where to buy, but not for the innumerable Americans who are ill-advised to take any kind of risk with their savings. The buying of land or the construction of rental property is, as Economist Miles Colean has said, "a venture of the most speculative sort, and even the operation of an established property is not without hazards." The possibility of miscalculation, Colean believes, "is present at every turn." Sites can turn out to be less attractive than imagined, or they may lose their appeal in a matter of a few years because of shifts in neighborhood character, changing living habits and ways of doing business, or improvements in transportation. As for new buildings, construction costs and operating expenses may be figured too low, while rental income may be overestimated; design may be faulty, or it may quickly become obsolete because of architectural or technical advances.

Thus while a well-located, well-designed property, or a prime suburban land parcel, may prove a good inflation hedge, particularly on a short-term basis, another property, seemingly as desirable, may not pan out well at all. (The purchase price alone can make a tremendous difference, for high initial costs can sizably reduce the rate of yield from the property.) Given expert selection and timing, the dangers of miscalculation can be minimized. But even so, risk will remain. And it is no reflection on real estate as an investment to admit this, for it is risk, in part, that justifies the high rewards that realty can offer.

Buy land and wait

Nearly 150 years ago, John Jacob Astor, a man for whom real estate did exceeding well, counseled that if riches were your goal you should "buy land near a growing city . . . buy in the fringe and wait." To this day, Americans have never quite got over the idea, and generations of otherwise conservative citizens have invested in land and patiently waited for it to yield the diamond as big as the Ritz.

The chance of bonanza profits on raw land is undoubtedly more responsible than any other factor for the notion that realty can outleg even a galloping inflation. It is easy to see how the notion wins support. In the last decade,

for instance, farm-land prices, which are the only land prices recorded nationally, have shot up over 55 per cent, nearly three times the amount of inflation as measured by the consumer price index. Moreover, some suburban and recreation land prices have undoubtedly risen even higher. FORUM, in reporting on the postwar land boom two years ago, found that, in many cases, prime suburban land had tripled in price since 1947, even after correcting for dollar inflation. And in recreation areas, it found even more fantastic jumps of up to 1,000 per cent for some particularly prime sites.

If these markups were universal, no land owner, provided he bought low and sold high, could have failed, of course, to make a killing in the last decade, quite aside from beating inflation. The trouble is, though, that the land boom, particularly in nonfarm areas, has not spread its gold evenly. For one thing, there has been a marked difference between price rises for prime sites (those with good locations, good soil and topographic conditions) and markups for run-of-the-mill land, which often looks just as good to the ordinary investor. Further, even prime sites have not always brought peak prices in a sale, and some have not been able to sell at all. The reason for this is that advances of urban use into the fringe are generally erratic, leaping over stretches of undeveloped land that may take 20 or 30 years to be picked up by developers. (Some lots, of course, never sell and become, in effect, dead land.)

In short, while there have been profits galore on raw land, there rarely has been the assurance of profit that persists in folklore. To make money, investors not only have had to buy the right site at the right price—a feat which is tricky enough for experts—but they have had to know when to sell, and then unload precisely at that moment. The latter is particularly important, and it is a major reason why, despite the myths, long-term speculation in land is frequently unrewarding. Raw land produces no income, yet the passing years eat up taxes and compound interest. Unless the land can be unloaded profitably within a few years, the investor may find that his net profit in a later sale really does not compensate for the risk taken in holding the property over a long period.

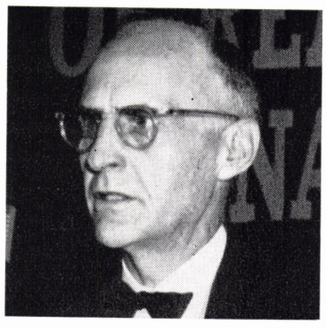
The variables of buildings

Investment in a new shopping center or office building can, if conditions are right, be far less speculative than dabbling in raw land. If, say, an office building is in an upgrading area, is well designed, and has a roster of tenants under long-term leases protected by rent-escalation clauses (i.e., rents rise with operating costs), the building may fill many of the requirements of a good inflation hedge. Yet selection even here is essential, and a great deal will depend on the quality of the management of the building. Moreover, much will hang on how the investment deal itself is set up, for, as has been pointed out by S. Edwin Kazdin, president of the American Institute of Real Estate Appraisers, income tax considerations, rather than the value of the property, are "often the factor

Real estate vs. inflation: how some experts rate it

WALTER DARAN

Miles Colean, *consulting economist: "Where to put your money is one of the great questions of an inflationary age. Real estate is no automatic answer. You have to pick properties carefully—and get big mortgages. Otherwise, costs and taxes may eat up whatever income there is."*



BOB FORESTER

Ernest M. Fisher, *professor of urban land economics, Columbia University: "Raw land, while it may be an excellent short-term speculation, is a poor long-range investment. And buildings make sense only if one can balance depreciation allowances against debt servicing."*

WALTER BENNETT

Homer Hoyt, *consulting economist: "In an inflationary period, the reproduction cost of a sound building should rise above the cost, and the owner should get more on a sale than he paid. But you have to be wary of second-grade properties; if blight sets in, your profit goes with it."*

Raymond T. O'Keefe, *vice president in charge of real estate, Chase Manhattan Bank: "Real estate can be an inflation hedge, but you shouldn't make a generality out of it. There is no such thing as a permanently good location. Like any investment, real estate must be watched closely."*

of greatest importance" in buying real estate.

Actually, with today's tax laws and borrowing costs, there is very little point in any investor putting up 100 per cent of the cost of a new building. The rate of return which he can hope for on his money—6 to 8 per cent—is simply not great enough to compensate for tying up a large amount of capital and for shouldering all the risks and managerial responsibilities that go with new construction. This lesson was learned by the life insurance companies, many of which undertook equity projects in housing and office space shortly after the war. The modest returns which the projects produced, and which had to be weighed against public relations problems and other management worries, have made it highly unlikely that the life companies will experiment further with ownership, except under unusual circumstances.

How then does an investor make money on new construction? The answer is that he works mainly with borrowed capital and seeks a high yield on the narrow margin of equity that he has in the project. Assume, for instance, a building which costs $100,000 and which will yield an 8 per cent return on capital cost before federal income taxes. If the investor has put up the full $100,000, he, of course, gets the 8 per cent a year, or $8,000. But if he borrows a large part of the capital, he gets a far greater yield on his money. A mortgage for $75,000 at 5 per cent will cost him $3,750 a year and will reduce his return, before taxes, to $4,250. But this return is on an equity investment of only $25,000 and, as such, amounts to a 16.8 per cent yield rather than one of 8 per cent.

In short, the smart investor makes money on the spread between borrowing costs and the income he can get from property. And he also makes money by operating on a short-term basis, pointing to a recapture of his capital in five years or less, if possible. The explanation for this is that, as each year passes, there is likely to be less income from the project. Amortization payments, which technically are a form of savings but actually are cash outlays from income, mount constantly over the life of the mortgage. At the same time, offsetting tax deductions for interest diminish, while those for depreciation either shrink or remain constant, depending on which of the three most common depreciation methods (straight-line, declining-balance, or sum-of-the-years' digits) is chosen for tax reporting. Under these circumstances, the investor gets less income after amortization and taxes the longer he holds the property. And this drop-off in income can be great, particularly if the investor has chosen, as most do, to accelerate depreciation and take disproportionately heavy deductions during the early years of the building.

Thus, while new construction may be an excellent inflation hedge, it is obviously a complex business for the nonprofessional. This is undoubtedly one reason why so many investors have turned to syndicates, or participation in lease-back pools, where the details of financing and management of property can be left in expert hands. Syndicates, however, do not relieve the investor of the need to investigate his deals carefully. For not all syndicates may be as smart in their investments and as capable of managing them as they pretend.

The aged need care

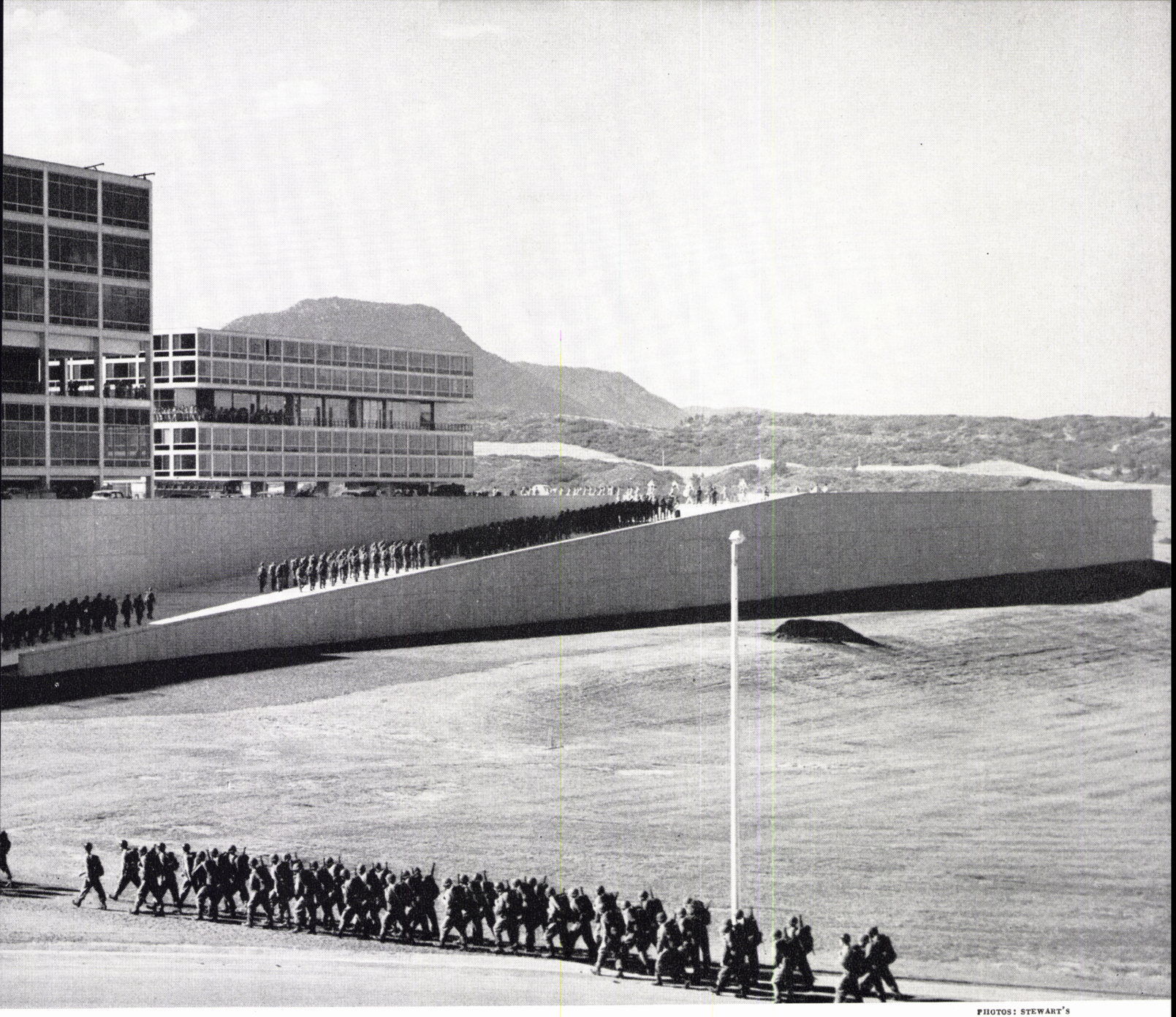
While there is no construction risk involved when an investor buys an existing building, risk is by no means avoided. A well-seasoned, well-located apartment or office building may take on the look of a safe, going concern, but there is always the possibility of increased property taxes, rising maintenance and modernization costs, and the chance of neighborhood downgrading leading to vacancies and reduced income. To be sure, the real estate investor has the opportunity to improve the property and thus improve its return, something he cannot do with many other investments. Yet, against this, he may have to contend with urban movements which make satisfactory returns difficult.

Economist Leo Grebler, who made a study of the income records of 581 New York City properties over the period 1900 to 1950, found that "net returns on long-term investments in the properties . . . have been lower than one would expect considering the risks involved in real estate investment." Specifically, Grebler discovered that annual net income as a per cent of acquisition cost (before depreciation and debt charges) showed violent fluctuations—from 20 per cent down to practically zero. Further, there had been such a severe decline in the ratio of net to gross income over the years that Grebler was forced to conclude that the obsolescence of structure and locations takes a tremendous toll of long-term investments as they are exposed to the competition of more modern buildings.

Obviously, if U.S. cities are ever to conquer their blight, there must be more investment in real estate, particularly rental housing, than there is today. Yet, taking fact rather than myth, it would seem counter to the public interest to argue that real estate investment is everybody's business any more than the stock market is. (The New York Stock Exchange, for its part, has now come to urge "caution" for small investors, a warning which is perhaps overdue.) Investment in real property, whether as an inflation hedge or as pure speculation, will always be something of a risk, good for those who can afford it, but not recommended for savers. If more funds are to be invested in real estate, the field should be made more attractive (i.e., safer) for conservative risk-takers, possibly through tax changes on an individual basis, possibly by changing the levy on real estate trusts so that trust income, particularly from rental housing, is not taxed at both trust and individual levels, as it is today. But the answer is not, as the *Wall Street Journal* has pointed out about the stock market, "to invite everybody into the water whether they can swim or not."

The air-age acropolis

On a base scaled to rival the grandest pedestals of antiquity stands the nation's first monument in the modern style—the new Air Force Academy



PHOTOS: STEWART'S

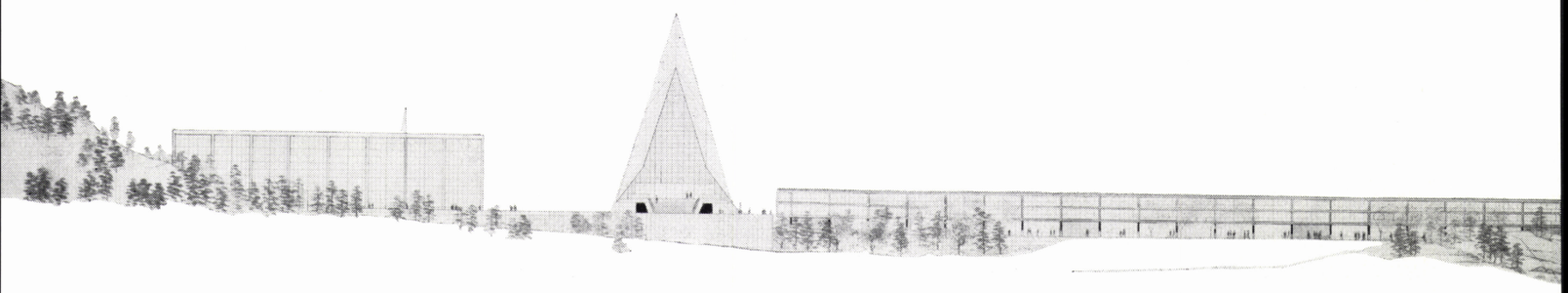
At the Air Force Academy in Colorado Springs, which was dedicated officially this month, there is a paradoxical sense of the land. Dramatic earth forms dominate not only the background, where the Rampart Range of the Rockies climbs darkly up behind the buildings, but also the foreground, where Architects Skidmore, Owings & Merrill have shaped the slopes as powerfully as the Babylonians, the Incas, and the Greeks once did.

Yet the Academy also has a sense of the air. The frameworks of the light, gleaming buildings are as open as their mighty granite-bound ramparts are solid and dense. This makes them, immense as they are, quite independent of the rolling countryside—like airplanes. To extend this impression the architects have perched some of their structures on stilts, have left some floors open, and have shot out long cantilevers, as in the mess hall (page 162). They also have provided a number of open hallways in the upper parts of the buildings, and some of these are hung so high that the cadets must feel almost air-borne—without wings—in that big Colorado sky. What the architects deliberately have not done is try to tie the materials or mood of the buildings to the locale.

The buildings are formed almost entirely of gleaming industrial materials —aluminum, steel, and glass (tinted gray against the high-altitude sky glare). Panels of hand-made ceramic tile in bright colors accent the perfection of the machined materials, and softening will be provided by extensive landscaping, which is not yet installed. Most of this leafage will be planted on the unpaved parts of the platform, on which are arranged all facilities for the cadets' daily activities except athletics, drill, and maneuvers.

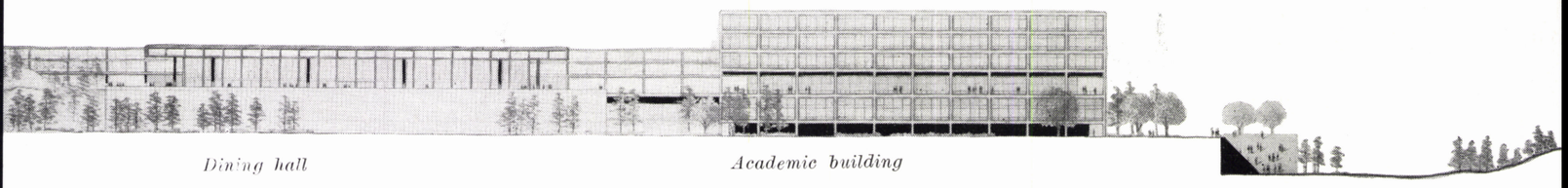
There are 17,878 acres, 1,070 cadets (ultimately 2,550), 2,070 supporting personnel with families (future on-site facilities for 6,000 in a town complete with shopping center), but no airstrip. The Air Force eventually wants one here, and—it has been charged by the

THE AIR-AGE ACROPOLIS

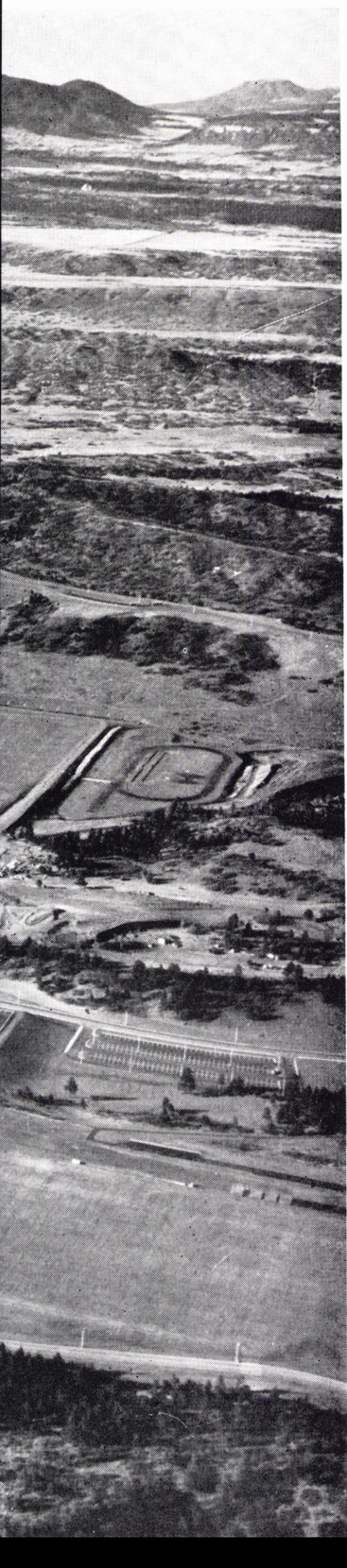


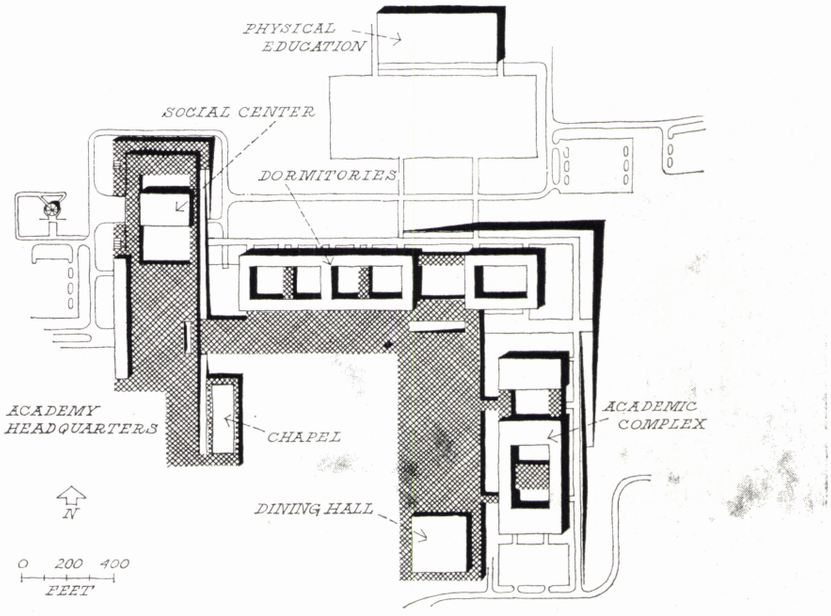
Academic social center *Chapel (not yet built)* *Dormitories*

C. L. BRUNSON



Dining hall *Academic building*





U. S. General Accounting office—already has committed $3.5 million to preparing a site. But a strip never topped the priority list of facilities, because the Academy is a school for military leadership, not flying. The excitement and romance of the young air arm are important, as the architects obviously realized, but it is the limited mobility of the foot soldier that defined the plan itself.

This limitation was yet another reason for building the high central platform of the campus on the rolling footlands, and for using ramps (no breakstep is necessary in marching). The character of the Colorado countryside which surrounds the platform may be mild, a perfect home for slow, staring steers, but the cadets walk quickly across their raised geometrical central campus from bed to class to mess. They walk, too, inside the six-story cadet quarters and the academic building (sketch above), which are at the edge of the platform. Elevators are for faculty and service personnel only. Cadets trudge up or down to the bedrooms and classrooms above and below the platform.

The first great national monument in the modern style, the Air Academy is substantially complete and has been occupied nine months, but it still lacks a focus of much higher priority than the airstrip: the chapel. This controversial, tent-shaped building, to be made of pleated panels of aluminum and stained glass, has yet to be started. In the end it will make or break the entire design, whose buildings now are gathered waiting, beautifully impressive in themselves, but repetitive, looking for a daring architectural leader.

How do the cadets like their $132.1 million (money already spent or under contract) home? They like it, sir. But with the amiable disrespect of students everywhere they have nicknamed it "Windy Gulch" and "Venturi Valley School" after the enormous Colorado winds that sweep across their plateau, smashing doors and panes of glass when it can. Atop its battlements the new Academy is, indeed, an airy place.

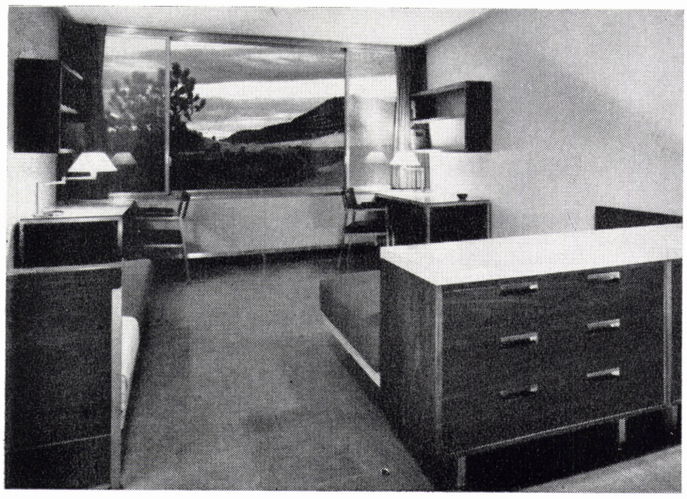
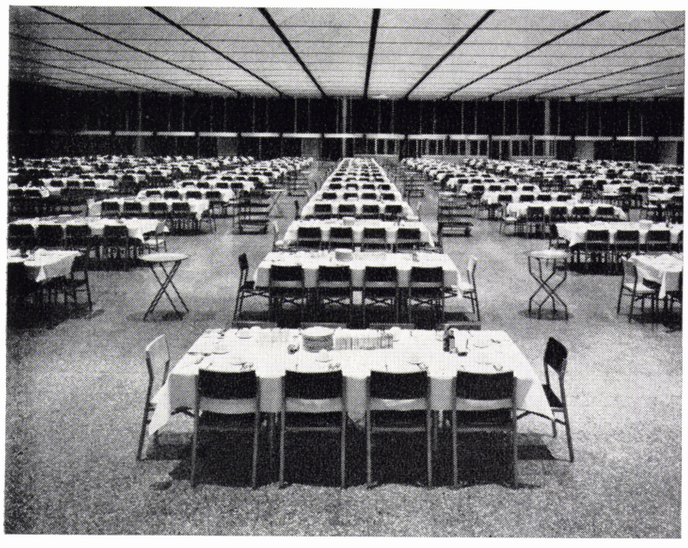


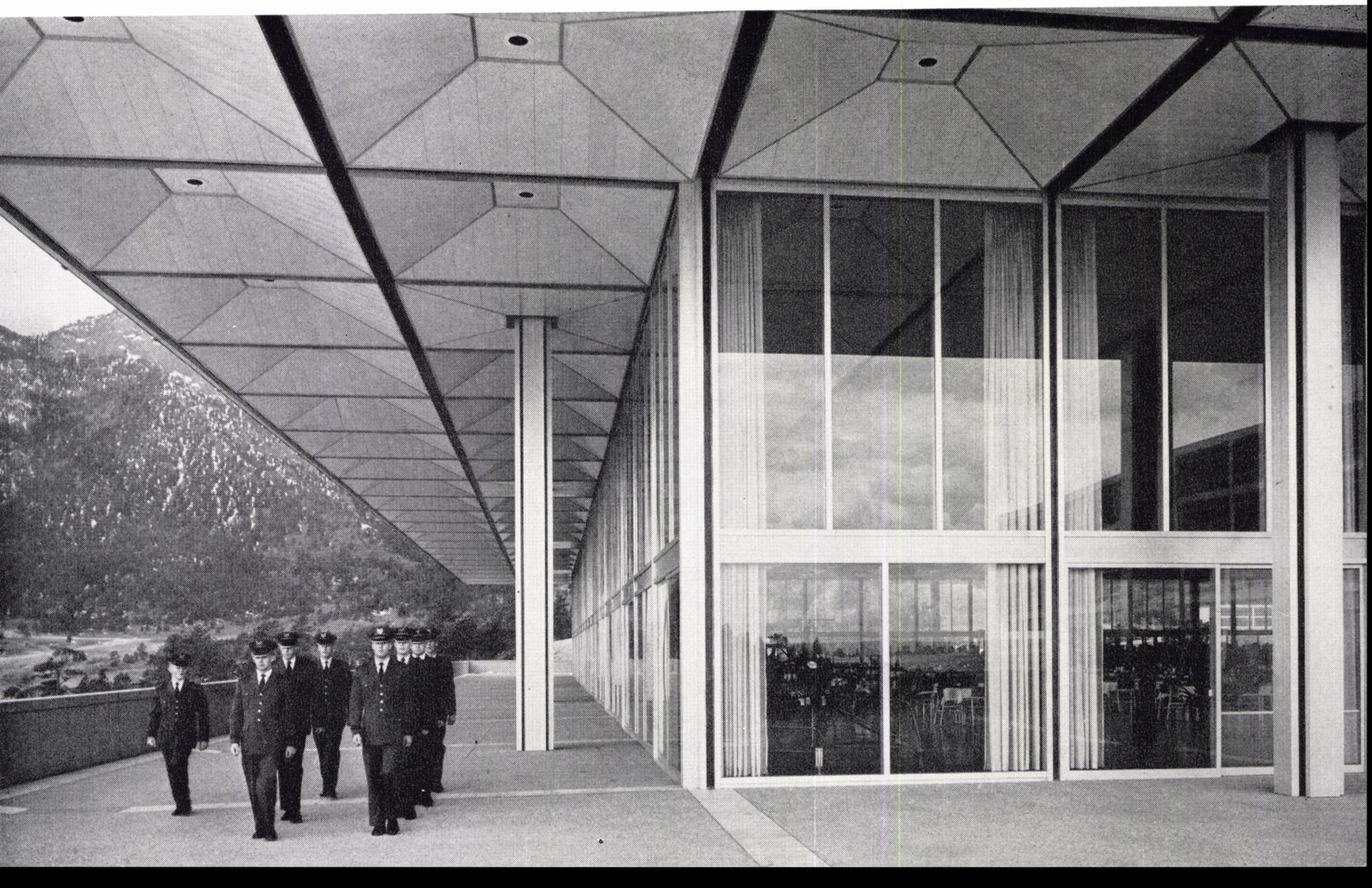
PHOTO (LEFT): WINTER PRATHER; (OTHERS): STEWART'S

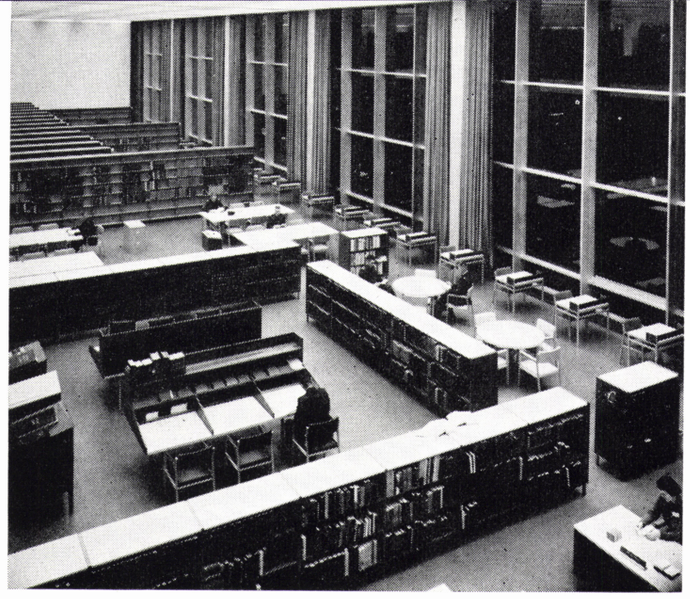
Dormitories *contain 1,320 rooms, each housing a pair of cadets. Hallways (upper left) and individual rooms are furnished and partially finished in walnut veneer. Open floor for circulation is at the platform level of the Academy. Smaller landscaped courts separate the wings.*



Dining hall *(left) is an enormous room 268 ft. square, completely free of columns. The roof structure is one gigantic two-way truss, framed in steel, 24 ft. deep, which was assembled on the ground and jacked up into place atop the 16 exterior columns (Forum, March '58). Aluminum pans finish off the underside of the overhang (right).*

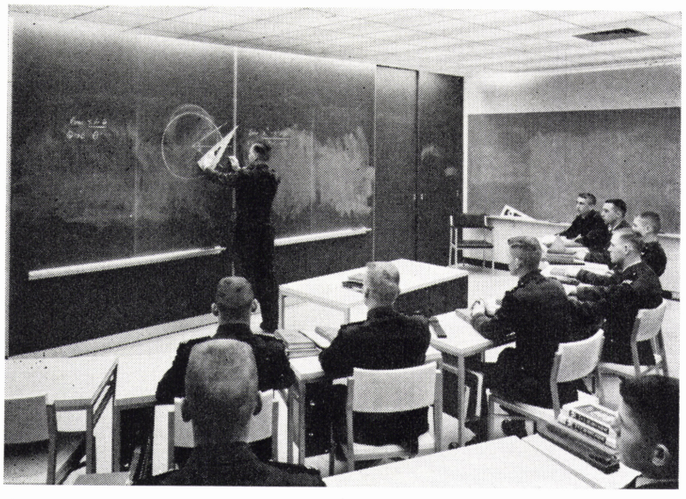
ARCHITECTS & ENGINEERS: Skidmore, Owings & Merrill
FOUNDATION & SOIL ENGINEERS: Moran, Proctor, Mueser & Rutledge
WATER & SANITARY ENGINEERS: Robert & Co., Associates
ELECTRICAL & HEATING ENGINEER: Syska & Hennessy, Inc.
LANDSCAPE ARCHITECT: Dan Kiley
ACOUSTICAL ENGINEERS: Bolt, Beranek & Newman
GENERAL CONTRACTORS: Farnsworth & Chambers Co., Inc., academic complex; Dondlinger & Sons Construction Co., dining hall; Robert E. McKee, dormitories



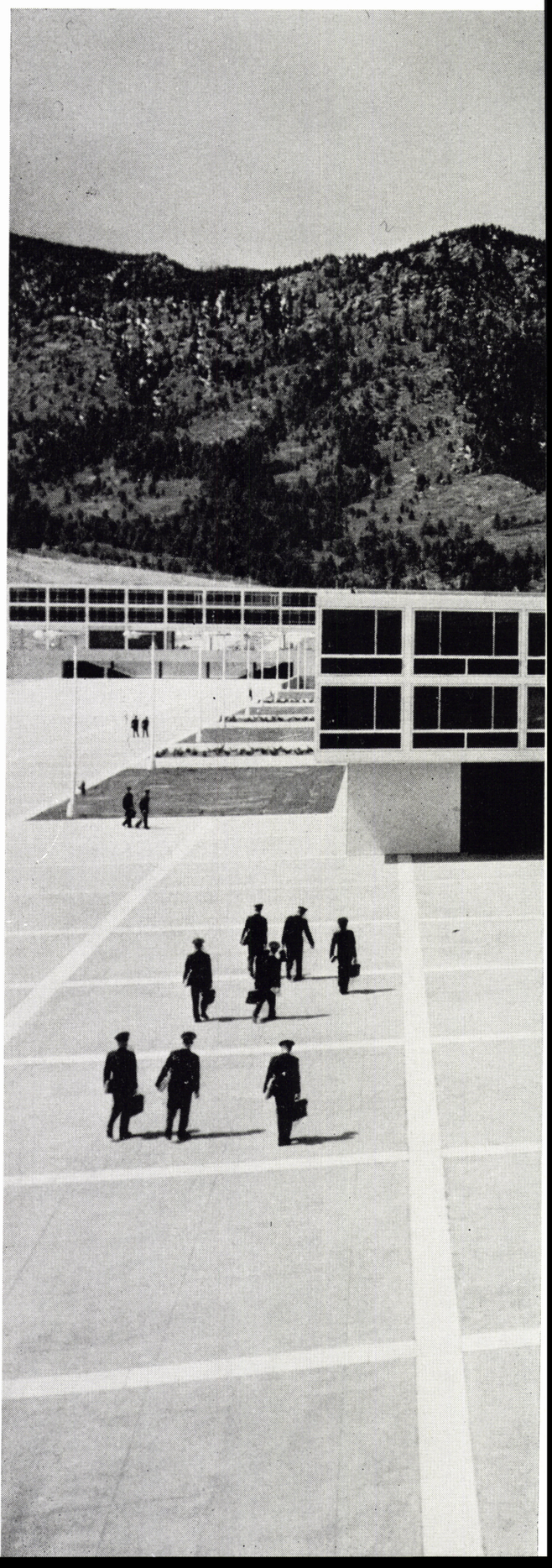


Library *has huge glass walls facing north and south, with low partitions of bookcases defining the study areas. All of the Academy's furnishings and equipment are by Walter Dorwin Teague Associates.*

Office space *is simply partitioned with no attempt to be evocative in the sturdy old military style. Luminous ceilings complete the typically businesslike atmosphere.*

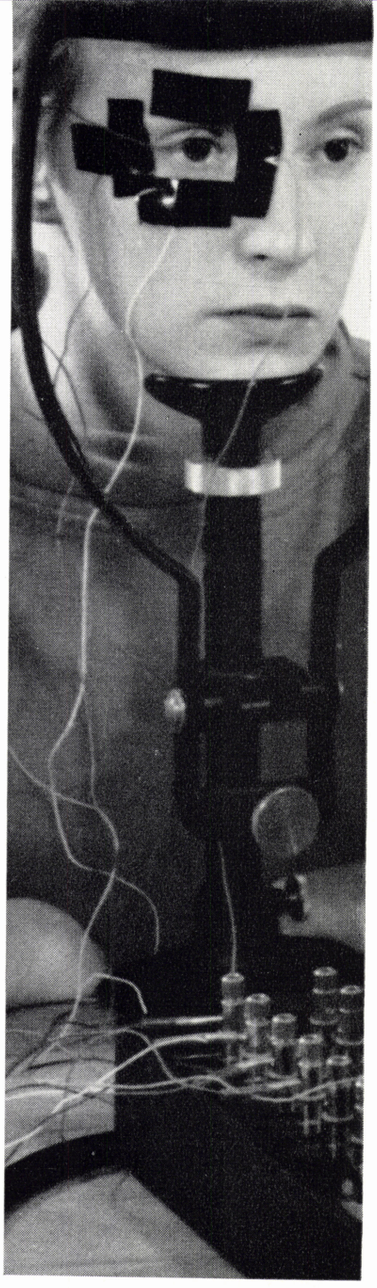


Classrooms, *called section rooms, are small, to accommodate the military method of teaching, which calls for each of the 12 to 16 cadets to recite daily. There are no windows; walls are chalkboards.*



PHOTOS: STEWART'S

Cadets head back to their quarters after a rare week end off in Denver, the nearest big city, 60 miles away from their sophisticated architecture.



The first basic, broad-scale study of light requirements for specific tasks yields data that may profoundly affect all lighting standards

BY DAVID ALLISON

New measure for light

A new scientific study of the lighting required for specific tasks, hailed as one of the most important contributions to illumination progress in a generation, is currently sparking technical conferences, controversy, and heated conversation among architects and engineers. It may profoundly affect future lighting standards the world over. From the earliest days of the electric lamp, with its promise of unprecedented levels of artificial illumination, the basic question has been: how much light is required for efficient seeing? There has never been solid agreement on proper lighting levels, even among scientists and engineers, and thus the basic question has inspired a wild assortment of answers.

To be sure, a number of outstanding scientists have made impressive contributions to the science of seeing, enabling vast improvements in building illumination. Moreover, the steady expansion of electric power capacity, along with great strides in lighting technology, such as the fluorescent and other types of lamps, have made possible ever higher levels of electrical illumination. Since 1910, illumination levels have more than doubled every decade, for a 30-fold increase over all. Indeed, the industry has been so successful in supplying more light that the problem has been subtly shifting from one of mere quantity to more quality. But the basic question of proper illumination levels remained: there was still need for a method of measuring the capabilities of the eye and, beyond this, a system for amassing and evaluating vast amounts of data on vision.

Today, an answer may be near at hand. After more than ten years of basic research, a young Ohio State scientist named H. Richard Blackwell, who is both a psychologist and a physiologist in optics, has developed a quantitative method for determining the illumination levels required for adequate performance of specific visual tasks. The lighting industry has sponsored this work on light levels since 1950, through its Illuminating Engineering Research Institute, and it was to the IERI last year that Blackwell presented a comprehensive report which already is known widely and simply as the Blackwell Report.

What the report is and is not

In general, the Blackwell Report says that most of the tasks observed could have been performed more efficiently with more light. It contains a table on 56 visual tasks, from schoolwork to factory work, which indicates that many require more light than had previously been supposed, while others require less. In this it confirms the gen-

eral trend of lighting, which is still upward. But the Blackwell Report is *not* a carte-blanche recommendation for higher levels of illumination; in fact, it suggests that some tasks today may even be overlighted. This seeming paradox already had led to much misunderstanding.

Thus, to understand what the Blackwell Report is, one should perhaps begin by understanding what it is not. It is not a table of new illumination levels. It is not a technique whereby illumination levels for an entire space can be directly determined. (The third edition of the IES *Lighting Handbook,* just out, contains tables of newly revised illumination-level recommendations, generally upward, "based on" Blackwell's findings. But these are not Blackwell's recommendations. Indeed, many people are questioning the validity of this interpretation of the Blackwell data, because the new IES recommendations apply to room lighting, while Blackwell's data applies only to specific tasks.)

What the Blackwell Report is based on primarily is a critical inquiry into the degree of difficulty a person encounters in performing the tasks of seeing. It has long been known that four factors influence the eye's ability to see an object. These are the size of the object, the contrast between the object and its background, the time the object is exposed to view, and its brightness. To establish a standard by which seeing difficulty could be measured, Blackwell took all four of these factors into account. Further, he excluded glare from the objects seen in his tests. Glare is unwanted light, either reflected to the eye from the object in view or reaching it directly from the light source. In many cases, it reduces contrast, one of the four factors affecting seeing ability. In an important concomitant to Blackwell's work, fellow-scientist Dan M. Finch of the University of California has developed a technique for measuring glare's effect on contrast. Thus, the findings of both scientists must be coordinated to achieve better quality illumination.

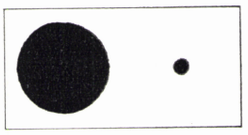
Blackwell's first step was to measure the accuracy with which people determine the presence of targets of various sizes and contrast when exposed to view for short periods of time. Hundreds of thousands of such measurements were made, using college students with good vision as his subjects, and from these data Blackwell developed a series of curves which related contrast and brightness. (A sample of these curves is shown on page 169.) These data, collected and analyzed over several years, are the cornerstone of the Blackwell system; they represent many "degrees of difficulty" in seeing objects under varying laboratory conditions.

The next step was to match laboratory results against representative seeing tasks, such as reading a sixth-grader's handwriting or finding a brown stain on a piece of gray cloth. Some of these tasks are shown on page 168. To establish relationships, Blackwell and his associates developed an optical instrument, a visual task evaluator, by which an observer viewed an object, such as handwriting, and by optical adjustment reduced the object to bare visibility or "threshold level." At this level, the object's visibility is identical with one of the laboratory targets, for which required lighting data had already been determined. Thus, by matching the two visual tasks, and by knowing that an equal amount of light is required to perform all visual tasks of equal difficulty, the scientists were able to match laboratory data to any number of seeing tasks commonly performed in the field. And because Blackwell was able to equate virtually any seeing task—from reading large type, which is easy, to reading a fifth carbon from a typewriter, which is very difficult—to his laboratory data, he could determine the illumination levels under which these tasks could be performed satisfactorily.

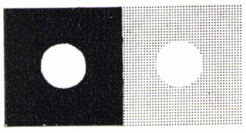
The report's significance

The most important point to remember in applying these findings to use is that Blackwell's technique does not immediately determine the proper il-

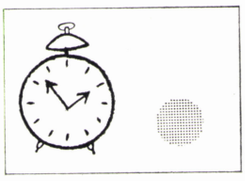
These factors affect ease of seeing:



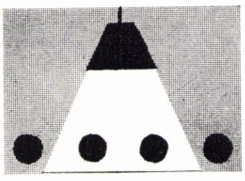
Size of object



Contrast

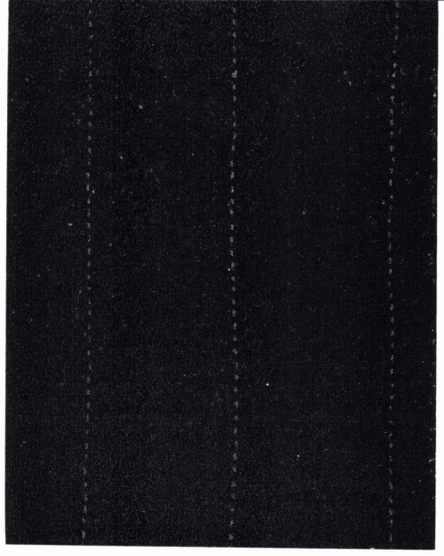


Time



Brightness

Revolving wheel *helps the scientists to determine the eye's ability to see under dynamic conditions, such as reading or writing, where the eye is in motion.*



Gray stitching on gray silk

10,000 foot-candles

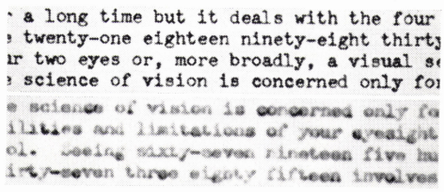
Blue-gray raised threads on silk

1

Chip grain, viewed from 16 ft.

White line on blueprint, with tracing-paper overlay

Typed original, extremely poor ribbon

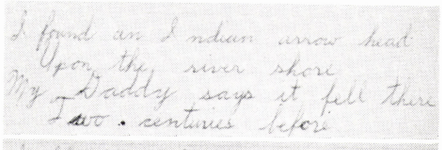


2

3

1,000 foot-candles

Brown color difference in cloth



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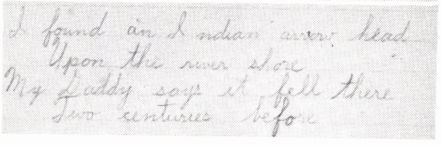
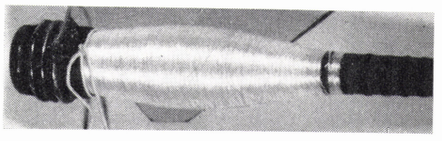
Thermofax copy, poor quality



5

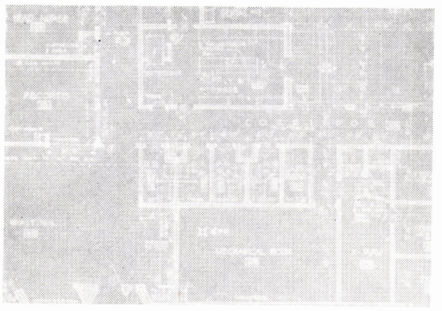
Orange chalk on light brown tweed



6

Typed carbon, fifth copy

100 foot-candles



Shorthand with No. 3 pencil

Sixth-grader's No. 2 pencil writing

7

Easy vs. difficult tasks: *Scientist Richard Blackwell measures the degree of difficulty in viewing various tasks (above), then determines illumination levels under which each task will be seen equally well: 1) light stitching on blue cloth requires 5 foot-candles (f-c) for good visibility; 2) typed original with good ribbon: 1 f-c; 3) typed carbon, fifth copy: 133 f-c; 4) ink writing: 1.4 f-c; 5) pencil writing: 63 f-c; 6) broken thread on bobbin: 487 f-c; 7) white line on blueprint, with tracing paper overlay: 5,090 f-c.*

10 foot-candles

No. 2 pencil on tracing-paper over blueprint

How much light for equal visibility? *Typical seeing tasks (left) are matched against illumination levels which will make each task equally visible. Thus, more difficult tasks rank high on the scale, while easy tasks rank low.*

Eight point Bodoni type

1 foot-candle

Typed original, good ribbon

lumination levels for an entire room. The tasks performed in any given room will cover a wide range of seeing difficulty which must first be evaluated before a decision is made as to the proper light level for the whole room. If the most difficult seeing task occurs infrequently, it is perfectly possible to tolerate a lower illumination level embracing the major tasks done in that room. Blackwell leaves this evaluation and decision to those applying his technique to actual lighting problems. (The IES has adopted its own yardstick of light-level recommendations for an entire room based on the typically most difficult task performed in the room.)

To illustrate: among the 56 tasks Blackwell studied was the handwriting of a dozen sixth-grade children, using No. 2 pencils, the poorest samples from a class of 31. His analysis indicated that 63 foot-candles was the proper illumination level for performance of this writing task. But this does not necessarily mean that the classroom should be lighted to this level, for the children are engaged in a variety of activities throughout the school day, some requiring high levels of illumination, others relatively low levels. All it means is that 63 foot-candles should be used if writing with a No. 2 pencil is a frequent and important visual task, an evaluation that can be made only by educators fitting this task into the whole scheme of modern education.

A second point to remember is that Blackwell's studies were made under glarefree conditions, whereas most environments have at least some direct or reflected glare. Blackwell, however, has provided a method for correcting his illumination levels to take account of the glare which causes marked loss in contrast and hence reduction of visual efficiency. To be sure, this loss in efficiency can be compensated by an increase in the light level, but a small loss in contrast demands a major increase in illumination: a 1 per cent contrast loss requires a 15 per cent increase in illumination to maintain equal visibility. This fact points up

the importance of controlling glare in good lighting design.

Thus Blackwell's work does not provide a short, easy road to good lighting, for lighting is much too complex a matter for lazy simplification. The great significance of his work is that it takes much of the guesswork out of determining proper lighting levels for specific tasks and provides a scientific method and instrument for measuring lighting requirements in all fields. To further this, Blackwell and his associates at Ohio State have designed a portable version of their visual task evaluator, enabling lighting engineers to make measurements and evaluations in the field.

In addition, Blackwell's research points up an important fact concerning seeing difficulty never before measurable: the great importance of contrast to ease of seeing. For instance, it long has been known that a fifth carbon copy is more difficult to read than an original typescript, but until Blackwell measured the relative degree of difficulty it was not realized that it is four times as difficult to read the fifth carbon. Similarly, he has shown the degree of difficulty a school child encounters in reading a purple ditto as opposed to textbook type, a fact which suggests that those concerned with eyestrain might first improve the quality of duplicated material read in school, for this can reduce seeing difficulty as effectively as brighter lights.

Because the Blackwell Report is the result of years of effort by a scientist and staff of high reputation, and because it is the first work of such magnitude in the field of illuminating engineering, it is likely to be referred to for many years to come. Ideally, it is to be hoped, it will be referred to in the interest of better lighting, rather than merely in the interest of selling more light and lighting fixtures.

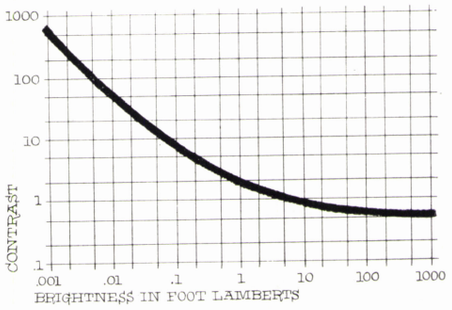
Application to building design

How can Blackwell's data be applied in building design? School design is showing the way. Long before the Blackwell Report was presented, a joint task committee on school lighting standards anticipated its importance and agreed to delay issuance of new lighting recommendations for schools until the new data could be interpreted. The committee members represent three organizations: the IES, the National Council on Schoolhouse Construction, and the American Institute of Architects.*

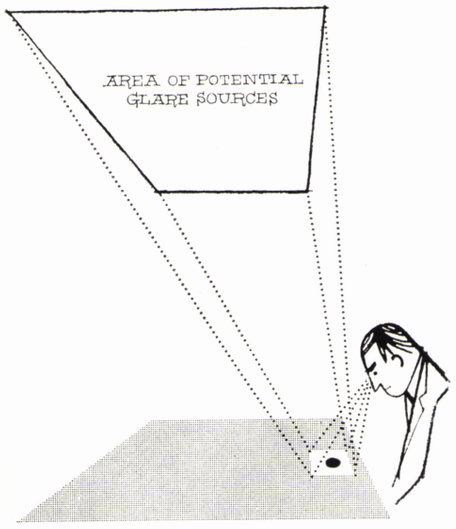
Actually, the committee's architects and educators had long been dissatisfied with the ten-year-old *American Standard Practice for School Lighting,* an AIA-IES–sponsored publication. Too often, they felt, handbook users failed to search for quality in lighting through the masses of technical data, reclined instead on the tables of illumination levels. Further, they felt that the recommendations needed revision in the light of latest developments. The task committee's new document, instead of making specific recommendations for illumination levels, will feature the basic principles of good school lighting and lighting measurements, based on Blackwell's work and that of other scientists. The document will emphasize the factors affecting good visibility, e. g., reflected glare, discomfort glare; the importance of color, texture and form, as well as illumination levels. But it will not impose limitations by specifying *definite* light levels. Says AIA representative John McLeod: "We want the educator and the school board member to have a choice in deciding on his lighting installation, just as he has a choice in selecting the other components in his building. We are trying to avoid the approach

continued on page 250

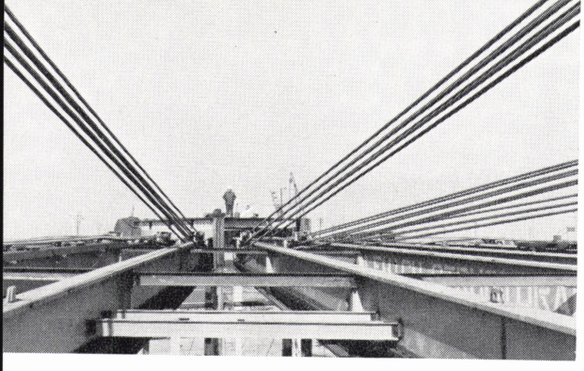
* IES representatives on the committee: C. L. Crouch, Technical Director of IES; Professor Everett M. Strong, Cornell University; J. M. Chorlton, Superintendent of Maintenance and Construction, Toronto Board of Education; NCSHC representatives: Charles Gibson, Chief of the Bureau of School Planning, California Department of Education; Wilfred Clapp, Assistant Superintendent in Charge of Administrative Service, School Planning Division, Department of Public Instruction, State of Michigan; Dr. Ray L. Hamon, Chief, School Housing, U.S. Department of Health, Education & Welfare; AIA representatives: John McLeod, of McLeod & Ferrara, Washington, D. C.; Henry L. Wright, of Kistner, Wright & Wright, Los Angeles; Lee Cochran, of Perkins & Will, Chicago.

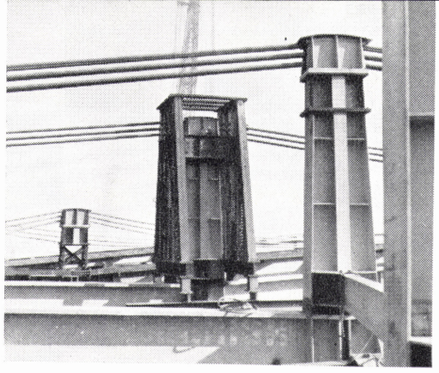


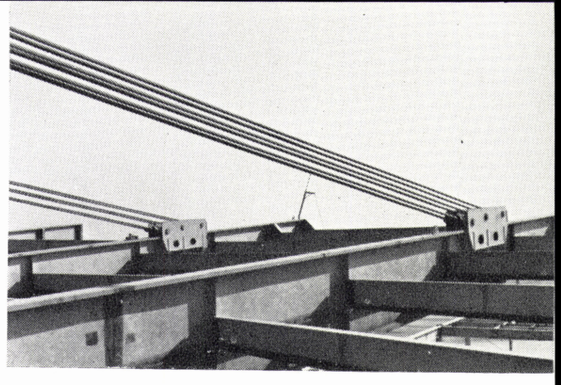
Contrast vs. brightness: *Blackwell's chart (above) shows how contrast affects required brightness. As contrast goes up, brightness can be decreased without sacrificing good visibility. Thus, good typewriter copy (contrast of 2.5 on chart) requires brightness of only 0.6 foot-lamberts, while poor carbon (with contrast of 0.64) requires 70 foot-lamberts of brightness.*

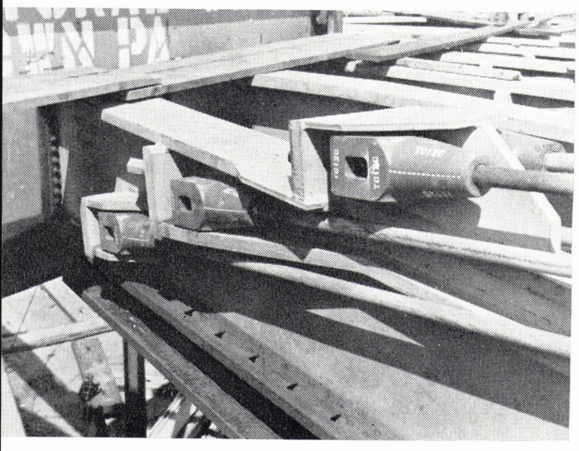


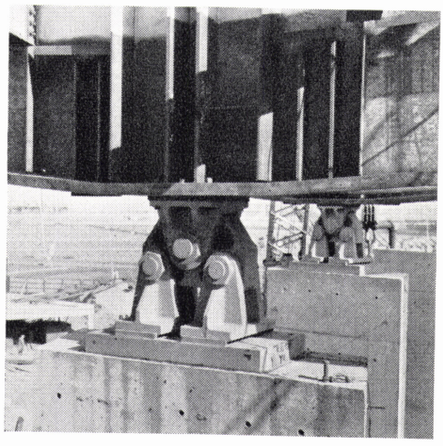
The glare problem: *The sketch (top) indicates ceiling area from which reflected glare is most likely to come. The samples of lettering (above), both illuminated at same level, show glare's effect on visibility. Top lettering is virtually glarefree; letters are sharp. Lettering below, reflecting glare, is washed out, harder to read.*











Prestressed steel girders *give the Pan American terminal an airy suspension-bridge quality, with maximum load-carrying capacity at minimum weight. Details (above and left) show how six high-strength bridge cables are tensioned over a post-and-saddle arrangement on each girder, and fastened firmly at the girder's ends. Four 100-ton hydraulic jacks raise the saddle until each cable is tensioned to an average 100,000 pounds. The saddle is then secured with the girder to its pier connection, a bridge-type rocker assembly (left) of novel design.*

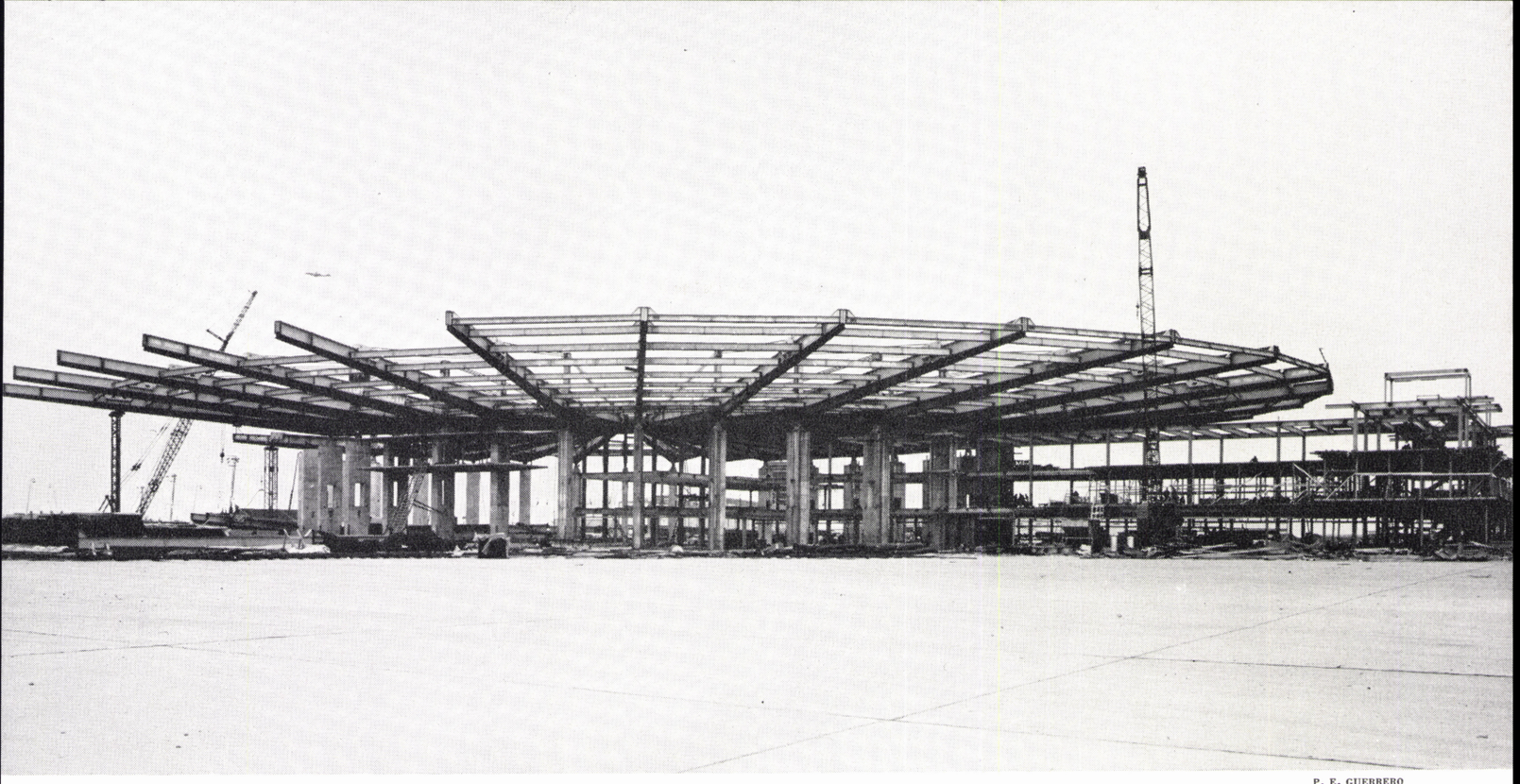
Steel for a flying roof

P. E. GUERRERO

Girders *are temporarily supported until anchored.*

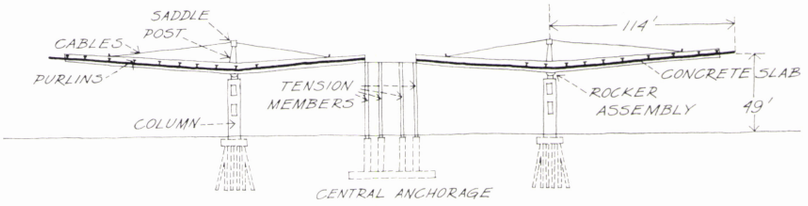
In the $10.5 million jet-age terminal being erected for Pan American World Airways at New York International Airport, structural steel is showing its ability to be molded into forms as novel as any in concrete. The main feature is a four-acre, oval, cantilevered, cable-stressed roof, combining bridge design with building. This design (by Architects-Engineers Tippetts-Abbett-McCarthy-Stratton and Associate Architects Ives, Turano & Gardner of New York) will allow jets to nose under the huge free-span canopy so that passengers are only a short walk on cable-hung walkways from the main lounge.

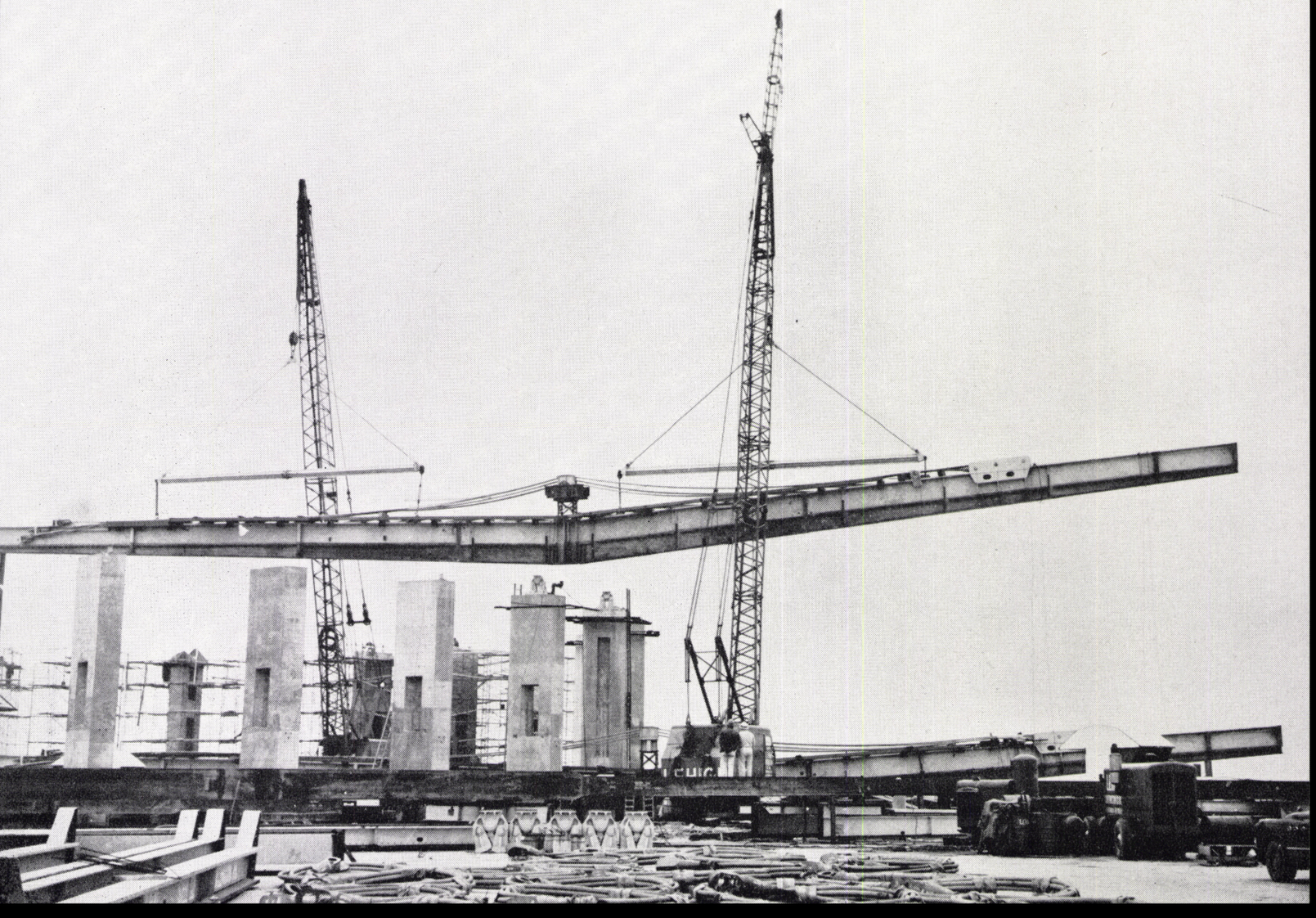
Steel erection was one of the most exacting, unusual jobs ever undertaken by Lehigh Structural Steel Co. of Allentown, Pa., who, with Turner Construction as general contractors, is building the structure. From a deep-set, hexagonal core, 32 tapered girders radiate out, supported about half way on concrete columns, and soaring free 114 ft. beyond that. Each girder came to the site in three parts, was carefully welded, then threaded with cables, hoisted into place and tensioned. Adjusted to elevation after a light concrete roof slab is poured, the stressed structure will withstand hurricane winds.



P. E. GUERRERO

Great oval wheel *of girders is cantilevered from core (see sketch) on a single ring of slender concrete piers to give the Pan Am terminal its unique aerodynamic design. Each girder (61 to 76 tons), welded in three parts on the site, had to be lifted carefully by two big cranes (below) at four points to prevent bending or deformation.*



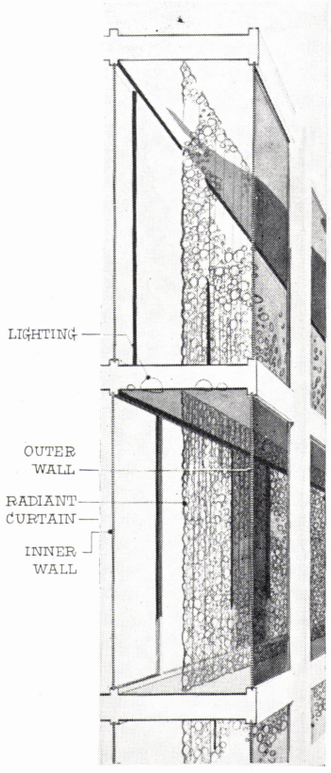


Wall construction . . . apartment finance . . . roof design . . . land development

? *How to achieve the benefits of an all-glass wall without increasing the heating and cooling problem.*

! *Put the layers of double glazing far enough apart to accommodate air circulation and heating elements.*

If the future course of architecture is to be toward more extensive use of glass, designers will do well to study the "air-wall" construction system of Penn State Professor A. William Hajjar. His design (sketch, below) consists of two glass walls 2 or 3 ft. apart between which is hung a plastic



curtain with an electric circuit printed into its fabric. This will provide heat when there is not enough available from the sun. Within the air space between the sheets of glass, air is circulated to all sides of the building: sun-warmed air is moved to the cool sides and cool air to the sunny sides. During winter, warm air is added to the system by means of the electric curtain; in summer, cool air is circulated within the wall. One of the system's exciting prospects is its reduction of air ducts. Hajjar believes the construction will lend itself to a "more natural method of heating, lighting, and air conditioning." He is building a small (20 ft. by 20 ft.) structure on the university campus in which he will test the practicality of the idea.

? *How to recapture the equity investment in an FHA apartment project without completely disposing of the building.*

! *Persuade FHA to approve a "sale-and-leaseback" arrangement, similar to that used in commercial building.*

When a builder erects an apartment building with a 90 per cent FHA mortgage, based on a 10 per cent allowance for profit and overhead, he ends up with his entire construction profit locked into the brick and mortar. Ordinarily, the only way he can turn this profit into cash, for investment in another venture, is to sell the project. And, if he is not sure that he can sell out until after the project is completed, he may be deterred from starting it in the first place.

One of the nation's foremost developers (who prefers to remain anonymous) recently persuaded FHA to approve in principle a "sale and leaseback" plan for new FHA projects, so that a builder will be able to arrange the "sale" of a project to another "investor" before he starts to build it—and thus be sure of getting out his profit in cash as soon as the project is completed.

During the negotiations FHA agreed to modify several of its rules indicating that it may soon put this precedent-setting plan into genuine effect. Primarily, FHA agreed to approve: 1) the leasing of an FHA project as an entirety by an owner to an operating organization; 2) the sale of the fee interest to a "trustee"—rather than to a corporation—still subject to the original 90 per cent FHA mortgage; and, 3) the use of "regulatory agreements" — rather than FHA's previously prescribed corporation charters—to maintain FHA's usual regulation and control over a project in the interest of the government as the guarantor of the mortgage.

Stated another way: in the future, FHA's approval for sale-leaseback deals will enable an apartment builder to convert his "equity" or "profit" in a project into cash, while he will still be able to make an operating profit from it under a long-term leaseback. Leaseback rent payments will provide both interest and amortization for the "investor" owner, who usually does not want to be bothered with a management operation, anyway.

? *How to organize the clutter of equipment which modern technology is putting up on the roof and improve the building's silhouette and its increasingly prominent "fifth façade."*

! *Consolidate the equipment in attractive penthouses integrated into a rooftop pattern.*

The face of the city, or at least the face first seen by most modern travelers, is now the rooftop view. When designing the International Minerals & Chemical Corp.'s administration and research center outside Chicago (FORUM, Feb. '59), Architects Perkins & Will recognized this bird's-eye problem and took pains to make their roofscape attractive both to air passengers bound for nearby O'Hare Field and to passers-by on the elevated Eden's Expressway. The roofs of the center's two lower buildings are decorated with red and white pebble patterns that are large enough to "read" from a considerable distance. The roof of the third, higher building is designed to serve as a helicopter landing port. And the center's left-over mechanical equipment has been built into two neat "penthouses."

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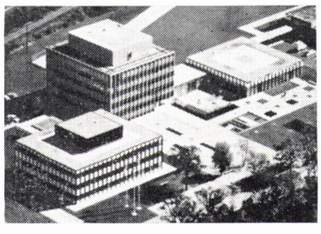


? *How to acquire land for a city-owned parking garage without taking it off the tax rolls.*

! *Buy only an underground easement for the garage and let the private land owner put other buildings on top of it.*

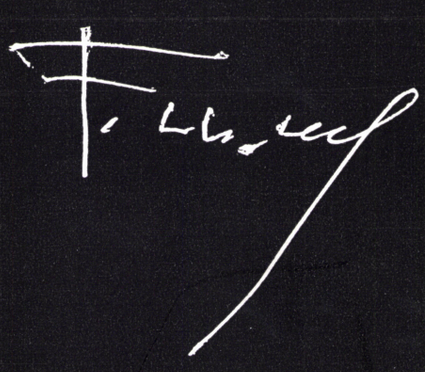
In acquiring land for a municipal parking garage a city normally pays twice: first for the land; then in lost revenue from the land, which is taken off tax rolls. Rochester, N.Y., however, has found a way to eat its cake and have it, too.

As part of its large privately financed Midtown Plaza redevelopment (FORUM, Dec. '58), Rochester will build a 1,930-car three-level underground garage on a subsurface easement from the project owners—costing only $1 a year. Above the city's garage, which will cover about seven acres, the private owners plan a 20-story office or commercial building and a two-story, fully enclosed shopping plaza (air conditioned in summer and heated in winter) embracing about 30 stores and shops. Most important for the city treasurer, all of the land will remain on the tax rolls at full assessment, so the private owners will continue to pay taxes on it and on the buildings they erect.

The city is spending about $8 million to build the underground facilities, now in the excavation stage, but parking revenues are expected to cover both debt service and operating expenses.

Victor Gruen, architect for the buildings being erected by the private developers, is also the architect for the city's garage, in cooperation with Bohacket & Flynn, of Rochester.

Imaginative new conceptions in architecture can frequently trace their origin to a basically simple idea. One of the oldest types of roofing, terne metal, thus lends itself to many dramatic new applications in the contemporary idiom. Because of its inherent adaptability in both form and color, Follansbee Terne permits the visible roof area to become a significant part of structural design. Thus by re-discovering and re-interpreting a time-tested material, we make out of the very old the very new. I have furthermore found terne superior to other roofing metals in economy, color-adherence, heat-reflection, permanence, workability, and low coefficient of expansion.



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Sculpture by Eloise Fichter

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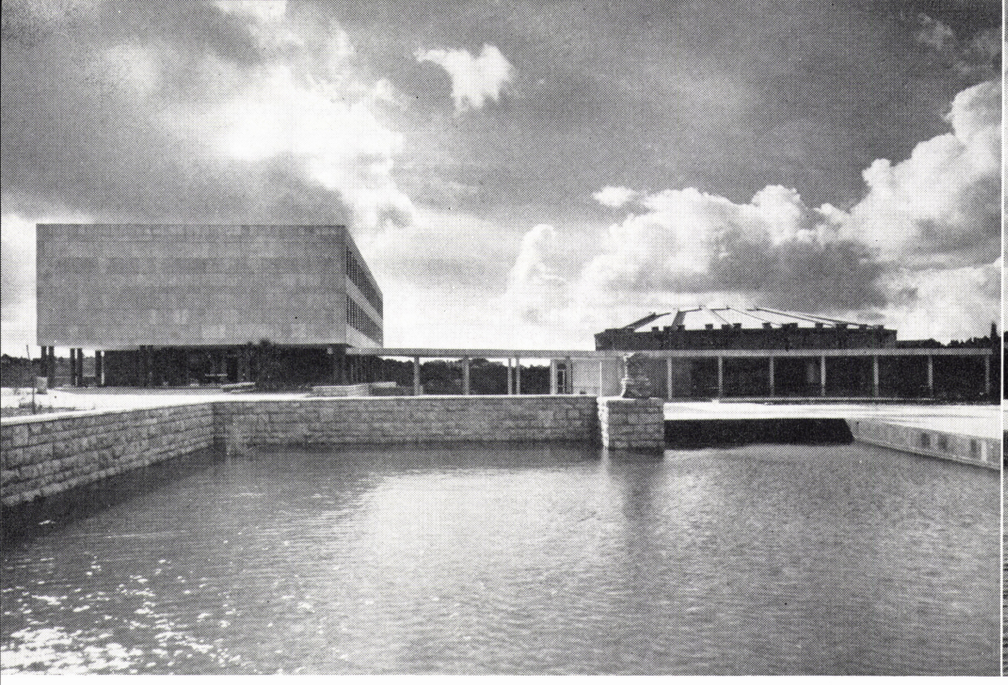
Israel: a photographer's notebook

H. SADEH

Architectural Photographer Julius Shulman went to Israel early this spring to do some promotional photography. He stayed on to take a ten-day photographer's holiday around the country and among its architecture. The results are shown on this and the following pages, occasionally supplemented by photographs from other sources.

Shulman found that Israeli architects' leading problems are too little water, too much sun, no vital architectural tradition. Yet he noted a fresh design-consciousness and was constantly amazed by the changing landscape.

In a desert scene he would unexpectedly come upon an urbane public building, like the Tel Aviv Municipal Hospital (below); on a slope above an ancient town he would find row houses for new immigrants, like the housing at Nazareth (above); and everywhere, a new environment in the making.



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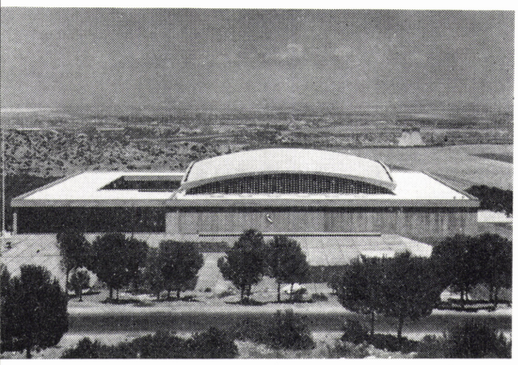

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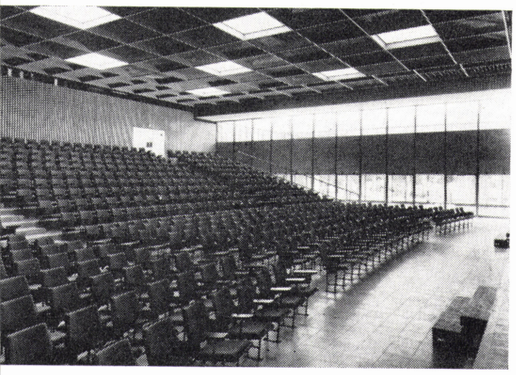
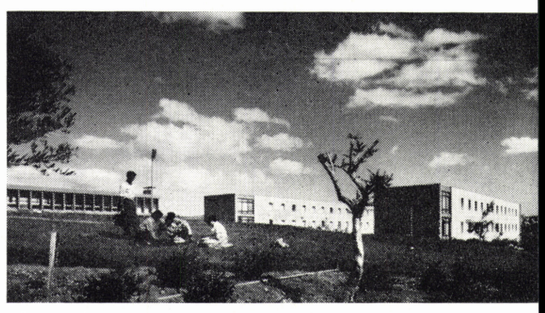


H. SADEH

3

4

1. Three new buildings of Jerusalem's Hebrew University are grouped around their vital landscaping feature—a pool. Architects: Sharon & Idelson.
2. On Mt. Carmel above Haifa is the Churchill Auditorium, also by Sharon & Idelson.
3. The interior of the Churchill Auditorium shows its relationship to the side-hill courtyard.
4. In a landscaped park near Tel Aviv is a dramatic archaeological museum by Bauman & Whittkower.
5. A street-level court of the same museum, surrounding an ancient olive tree, is formed by the Helena Rubinstein Pavilion. Architects: Karmi & Rechter.
6. Another building combining cultural activities with community functions is the Fredric Mann Auditorium, also by Karmi & Rechter.
7. The stone-ended dormitories of Hebrew University range down from the cafeteria. Note the irrigation sprinklers.



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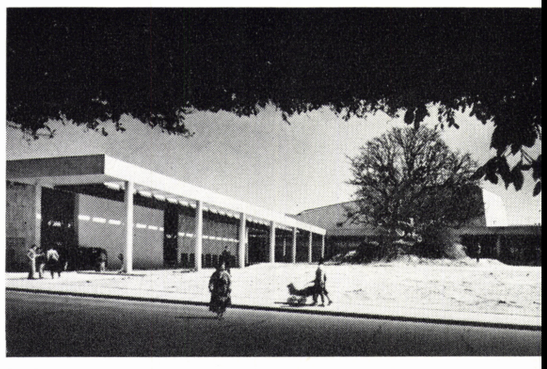

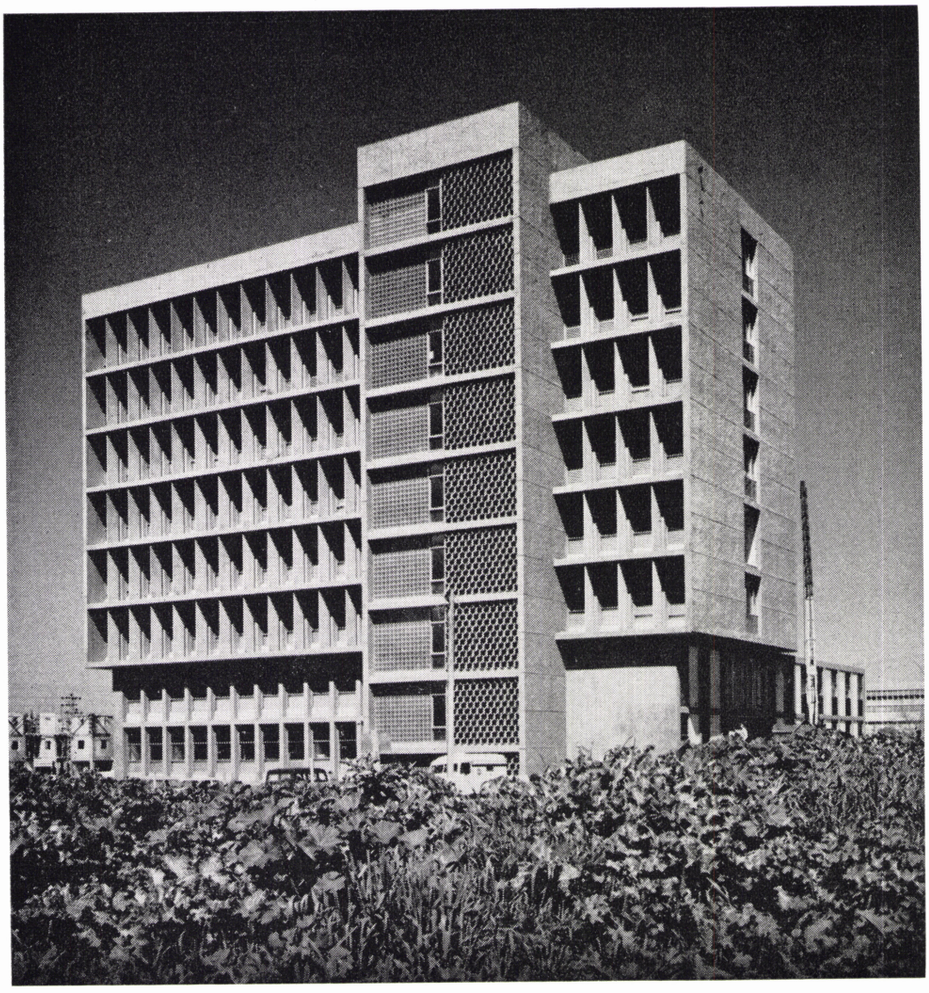

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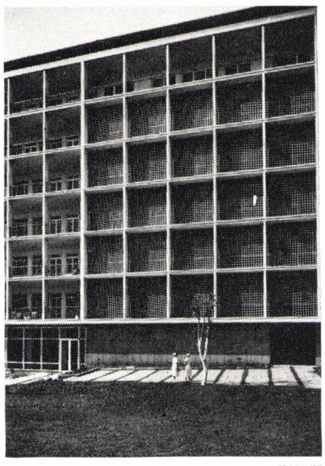
1. The need for deep sunshading and protective screens in Israel is shown by this rather formidable office building in Tel Aviv. Architects: Sharon & Idelson.

2. More refined sunshades are found on the south façade of the Dan Hotel in Tel Aviv, by Architect A. H. Fenchel. Note the contrast with a Bauhaus-influenced apartment house in the background.

3. Perhaps the most sophisticated shading devices in Israel are those on the Tel Aviv apartment house designed by Dov Karmi. The upper sections are horizontally adjustable; lower sections turn vertically.

4. Israel's civic architecture can be both functional and dignified, as observed in the Bellinson General Hospital near Tel Aviv by Sharon & Idelson. A detail of the south façade shows the louver-protected day rooms.

5. The north façade of the Bellinson hospital is unshaded, as severe as the countryside.



I. KALTER

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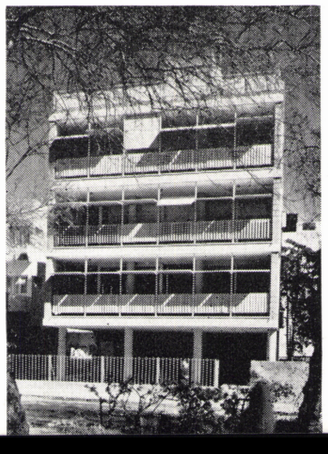

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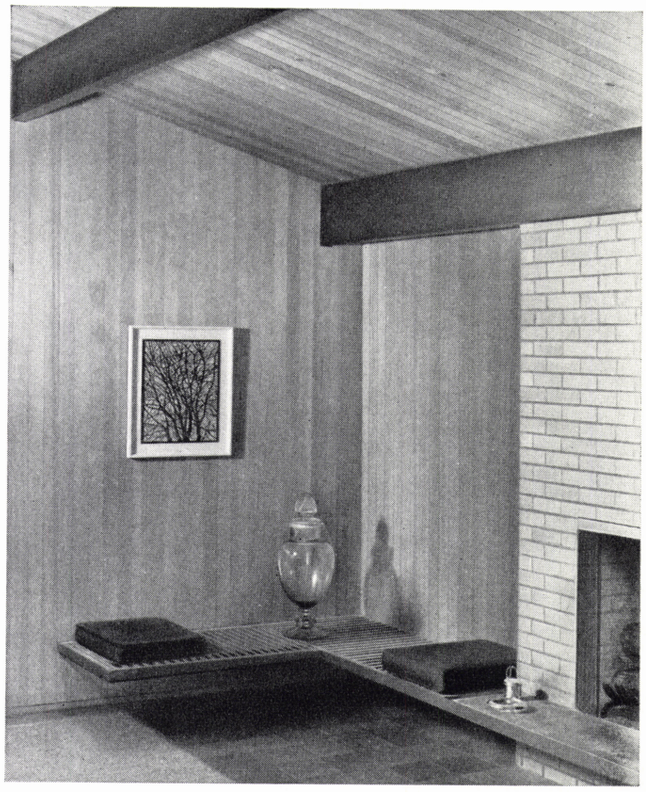

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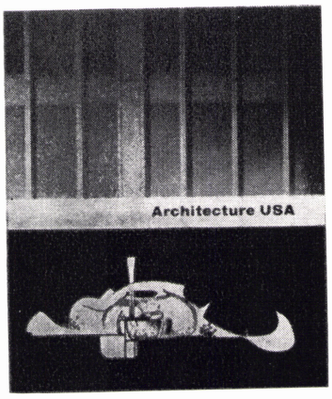

ARCHITECTURE USA. By Ian McCallum. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y. 216 pp. 9" x 11". Illus. $13.50.

Ian McCallum, executive editor of the *Architectural Review*, has earned a reputation as the angry man of British architectural criticism—particularly angry when it comes to criticising American architecture. His 1949 and 1956 visits to this country were shortly followed by bristling special issues of the *Review*, entitled respectively, "Man-Made America" and "Machine-Made America."

But something has happened. In this new book, brought out jointly by Reinhold and the publishers of the *Architectural Review*, McCallum seems to take a view of American architecture that is positively rosy. Witness his preface: "For the young European architect an American Grand Tour is becoming as important as the Italian was to the eighteenth-century English gentleman; apart from the buildings, he finds there a wider public interest in his subject than he is used to, an atmosphere of excitement that heralds something important taking place and, among the *cognoscenti*, a searching criticism which is an aspect of self-confidence." We've even got *cognoscenti* now!

Frankly, McCallum seemed more valuable to U. S. architecture in his role of critic than in his role of tour-director. His rather routine presentation of the high-points of postwar American building, architect by architect, could have been done by anyone with easy access to the tear sheet collections of the major architectural magazines. As helpful as the presentation may be to a European audience, it gives interested Americans very little that is new—or newly significant.

It is hoped that when Mr. McCallum next returns to the U. S. he will again be enraged by our national failure to make environmental sense out of our isolated architectural triumphs.

OUR HOUSE. By Olgivanna Lloyd Wright. Published by Horizon Press, 220 W. 42nd St., New York, N.Y. 308 pp. 5¾" x 8½". $4.50.

Our House is, in many ways, a suitable, final chapter in the life and works of one of the most heroic figures our country has ever produced. In this book Frank Lloyd Wright's widow presents, by means of anecdotes and by longer essays an illuminating picture of the architect deeply involved with his peculiar world. That world was, of course, both his profession and the life he had created at Taliesin and at Taliesin West.

This life attracted many appreciative people who flocked to Wisconsin and to Arizona to spend time with Wright, and it is disappointing not to find a more comprehensive picture of the visitors' reaction to what they experienced. For they were frequently people of distinct and acute perception. Mrs. Wright tells who they were and what they did, but she does not divulge what they said in unguarded responses. More could have been expected from her, since she does write for a newspaper (the Madison *Capital Times*) and has become known for the articulateness of her judgments.

She does, however, give a fine idea of the varied life at Taliesin—everything from K.P. to Carlyle. The range of talents acquired by the apprentices while contending with all the details of running a large estate as well as learning architecture is impressive. There are, from time

to time, glimpses of Mrs. Wright's life and of what it meant to be Frank Lloyd Wright's wife: their attempts to be alone, her pleasure in the children of Taliesin, her contribution to the pageantry and to the running of the place.

In a way, the book is much like a pageant, too. That is, it should be read and appreciated scene by scene, realizing that the intimate vignettes are as important to the meaning of Taliesin as are the discursive essays on architecture.

continued on page 194

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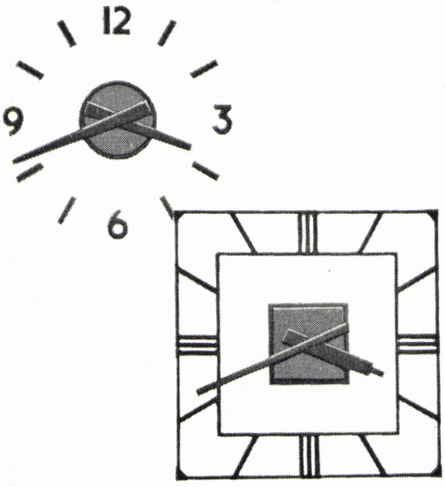

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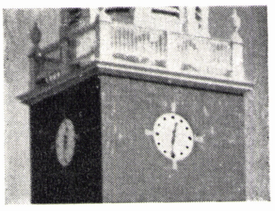

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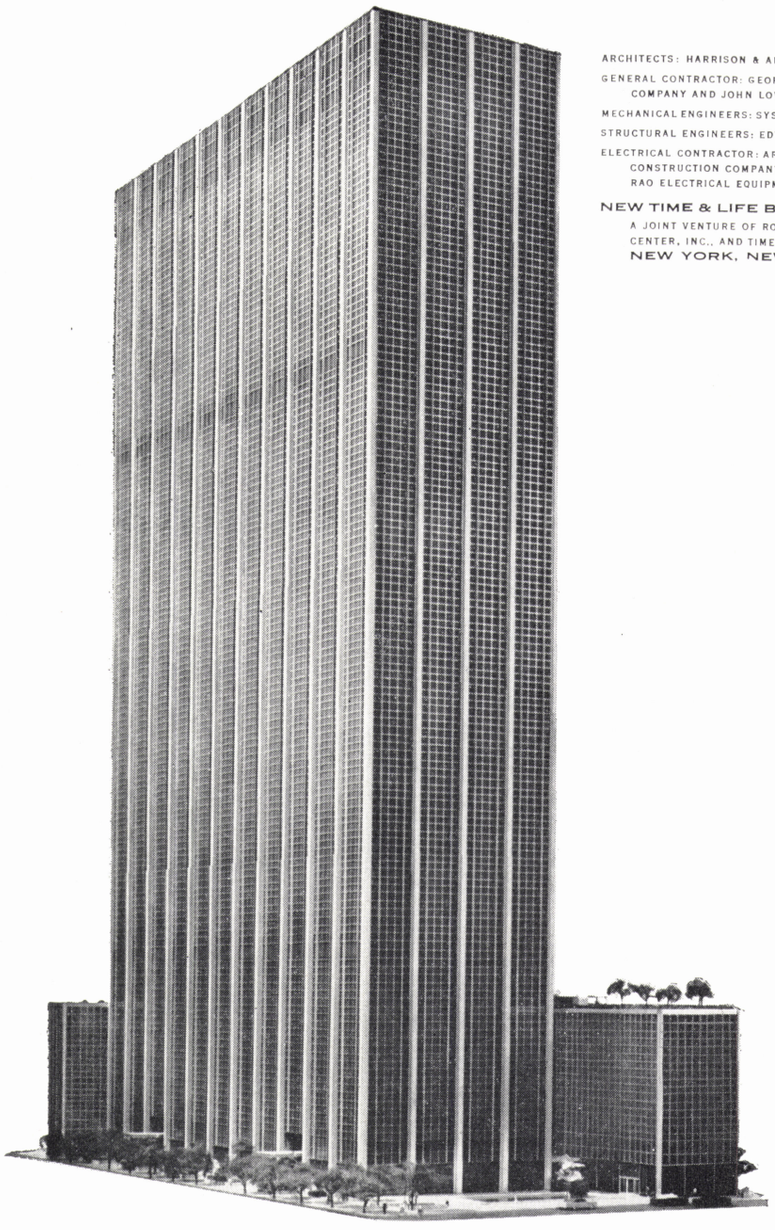

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BUILDING CONSTRUCTION HANDBOOK. Edited by Frederick S. Merritt. Published by the McGraw-Hill Book Co., New York, N.Y. 1150 pp. 9″ x 6″. Illus. $15.

This volume attempts to be "of greatest usefulness to everyone concerned with building design and construction, and especially to those who have to make decisions affecting building materials and construction methods." This, indeed, is a staggering undertaking, for the building industry is of such diversity and magnitude that meaningful summation within a single volume is extremely difficult. Given this limitation, however, the book does succeed in setting down information which should be useful to people with various interests in building. It is divided into 29 sections, including Professional Services and Business Practices, Building Materials, Specifications, and Cost Estimating.

BUILDING CONSTRUCTION ESTIMATING. By George H. Cooper. Second Edition. Published by McGraw-Hill Book Co., Inc., 330 West 42nd St., New York 36, N.Y. 398 pp. 9¼″ x 6¼″. Illus. $7.50.

An almost complete explanation of the building estimator's arcane skill.

MASTERWORKS OF INTERNATIONAL APARTMENT BUILDING. By F. R. S. Yorke and Frederick Gibberd. Published by Frederick A. Praeger, Inc., 15 West 47th St., New York 36. N.Y. 211 pp. 9″ x 12″. Illus. $12.50.

Perhaps the two most heartening concepts that could result from this book, especially for Americans being forced more and more to consider apartment living, are that apartment projects can be pleasant, well-equipped, and convenient communities within themselves, and that, with imagination, they can also add strong, varied, and sometimes quite handsome architectural patterns to the urban landscape. Of the 67 postwar projects from 15 countries reported in the book, some are relatively familiar—Le Corbusier's "Unités D'Habitation" at Marseilles, Nantes, and Berlin; other buildings at Berlin's Interbau exposition; Sweden's Vällingby; Caracas' Cerro Piloti; and such U. S. examples as Boston's Eastgate and Chicago's Lake Shore Drive and Lake Meadows. There are others less well known, including some designed by the authors and other British architects, and a Danish "collective house" for working couples and bachelors that illustrates the trend toward self-sufficiency with everything from service shops, restaurants, and nurseries to roof gardens, hobby areas and rooms for overnight guests. The book is largely pictures, plus pertinent plans, sections and construction details. The text is confined to notes on building types, access, facilities, materials and financing.

continued on page 196

What other people are saying

NOT FOR PROFIT

Herbert J. Ganz, assistant professor of city planning at the University of Pennsylvania, believes that redevelopment should not benefit the investors alone. His recommendations to the contrary were recently printed in the American Institute of Planners' Journal.

Redevelopment should be pursued primarily for the benefit of the community as a whole and the people who live in the slum area, and not for that of the redeveloper or his eventual tenents. The recommendations that follow are based largely on this principle.

▸ Renewal projects should be located first in those areas which are slums, i.e., in which it can be proven that the housing and facilities present social and physical *dangers* to the residents and to the larger community. The availability of a redeveloper ought to be a consideration, but one of far lesser priority.

▸ Renewal proposals which call for the clearance of an entire neighborhood should be studied closely to determine whether the existing social system satisfies more positive than negative functions for the residents. If it does, planners must decide whether the destruction of this social system is justified by the benefits to be derived from clearance.

▸ Projects which require large-scale relocation should not be initiated until the community has built sufficient relocation units to assure the proper rehousing of the residents. If private enterprise is unable to provide them, city, state, and federal funds will have to be used. Moreover, if relocation housing is built prior to the renewal project, and in sufficient quantity, and if it is attractive, it is likely to draw enough people out of the slum areas to reduce the market value of slum structures. Consequently, some of the costs of providing such relocation housing will be saved.

▸ If a community is unwilling or unable to provide the required relocation housing, it should not be permitted to engage in renewal operations.

▸ City planners ought to recognize the functions performed in the city by the low-income population. They should make sure that sufficient housing is available for them and in the proper locations (including some near the central business district) for their and the city's needs. The federal government should encourage the renewal of such housing by increasing its subsidies when the renewal plan calls for the rehabilitation or construction of low-income dwellings.

▸ In the future, when renewal becomes an accepted urban governmental activity, experiments should be made with flexible subsidies—so that federal contributions might be increased if the reuse is to be low-income or middle-income housing and reduced if it is to be luxury housing. Experiments should also be made with requirements that the redeveloper construct or finance some relocation housing—especially if the redeveloper proposes to redevelop the site with housing out of the price range of the site residents.

DISPOSABLE ARCHITECTURE

At the Hague last year J. Marshall Miller, associate professor in planning and housing at Columbia, delivered himself of some thoughts on the value of our "throw-away" civilization.

The most important urban areas of lasting value are open spaces, and the only thing predictable is "change." With the social and technological changes now obvious, we may be quite sure that today's designers and builders will not be able to predict the social, cultural, or structural demands, desires, and consequent urban fabric of the year 2000. Permanence of materials and construction practices may result in obsolescence, which is the major stumbling block to renewal.

The life span of many of our structures might be conceived somewhat the same as the life span of our cars. Many progressive industrial concerns now plan to write-off their plant and equipment and be ready to rebuild and retool about every 20 years. Just because a car is built of steel, or a structure of steel and concrete, is no logical reason why it should remain in use so long as the steel or concrete lasts.

I do not advocate structures which are less safe, less attractive, or even buildings which are necessarily less permanent—if they can retain their usefulness and vitality. Nor do I advocate the destruction of any monuments which have any inherent value—architectural, social, economic, cultural, or political. It would be foolhardy and uneconomical, however, to try to preserve sections of the urban fabric which are blighted and congested with obsolete structures and valueless monuments. Discrimination and disposal are essential for contemporary usefulness and service. The constant process of disposal, replacement, and renewal is, in reality, one of the most important foundations of an industrial economy. It likewise means good business for all.

continued on page 204

PLASTIC SURGERY

Unfortunately we architects are engaged in pasting tiny beauty spots on the decaying urban body.—*Victor Gruen, in a lecture at Yale.*

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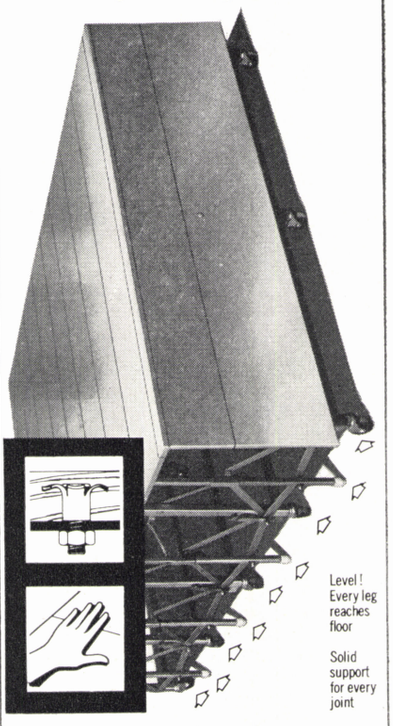

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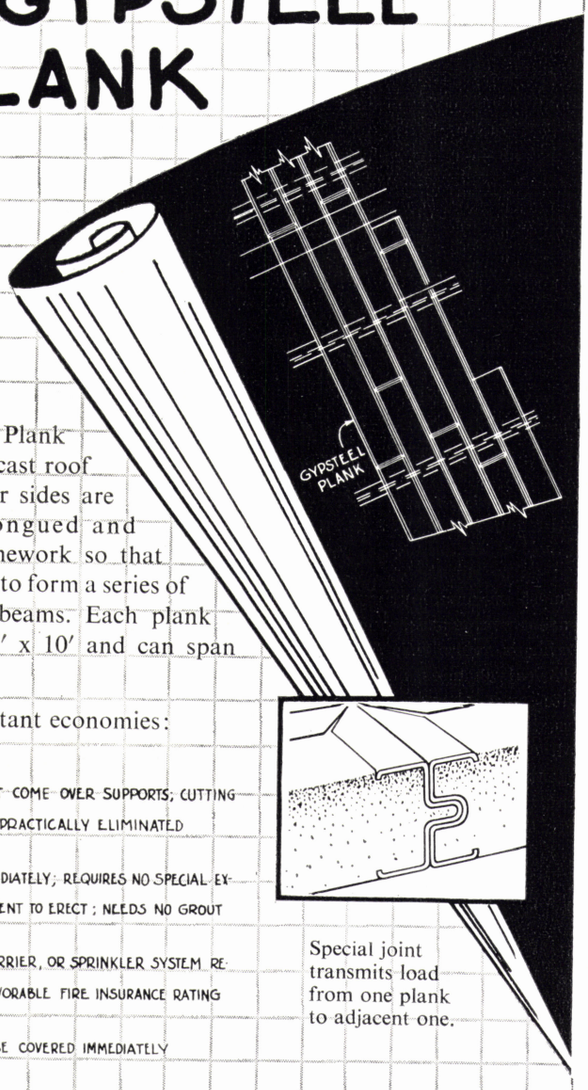

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ART AND THE CITY DWELLER

The need for a more truly urbane American art was pointed out recently by Kenneth E. Hudson, dean of the Washington University School of Fine Arts, writing in the St. Louis Post-Dispatch.

In other nations, and often in earlier times, the congregating of the artist and his audience in the great cities leads to the creation of a public art. This art is not exclusively architecture, for public buildings are incomplete without the human and sculptural contributions. Aspiring cathedrals without the ascetic dedication of sculptured saints would remain only engineering marvels in earthbound rock.

If the artist in America today seems ill-prepared to serve a social function, it is because he has been denied the opportunity to do so. His concerns are channeled elsewhere—first by necessity, lacking the public patron, and now by preference. It is the images of private and personal worlds which now excite his dedications.

Ironically, the private nature of his imagery often brings public complaint—a public art is desired, though we seem unwilling to pay for it or identify its service, and the artist who does not supply it gratis is apt to be condemned. For one condition of a public art is that its content must be readily accessible to all but the most dense—whereas the imagery of private and personal worlds must involve subtleties of experience and concept which require an effort to apprehend.

When the ancient caveman could draw an image of the savage bison, he felt that he had thus acquired the power to conquer it. We are yet sufficiently primitive to need visual and mental images which will aid us to understand and conquer ourselves—and to make peace with our cities and our universe.

LESS STYLE, MORE SCIENCE

Latin American Architect Alvaro Ortega pointed with alarm to the dangers of fashionable architecture when participating in a recent symposium organized by Owens-Corning Fiberglas.

In the development of architecture we are going through a confused period of crisis; vitality is lost; we are going in circles, and we repeat periodically the same mistakes. The process of analyzing the factors which determine the final product is considered a waste of time. Clichés are increasingly dominating architectural expression.

Architecture is following the steps and criteria dictated by the dress designer who controls feminine fashions. There are too many superficial creations—transient, sometimes spectacular, but always insincere and artificial.

What a great difference in the development of aeronautics—for instance, the aircraft of the 20's, the clipper of the 30's, the constellation planes of the 40's, and modern jet planes. All these have been logical stages,

continued on page 206

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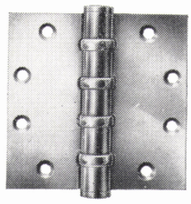


sincere, necessary, successive experiences which have been utilized advantageously.

What a difference with architecture! We are now producing the same type of architectural expression as in prehistoric times. Medicine, chemistry, mathematics, in a word, the sciences have had great vitality; whereas, frankly, what can we say of architecture? There is a search for fashionable detail, but the direction and the goal of architecture have been lost—without solving the real problems.

Architecture should have a scientific approach in order to solve its problems.

WOT'S FOR OXFORD?

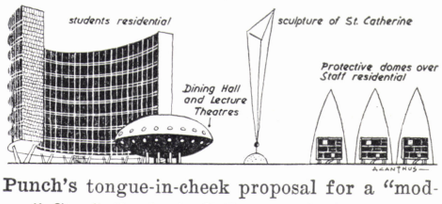
When rumors swept England this spring that Danish Architect Arne Jacobsen was being asked to design St. Catherine's College, Punch Humorist B. A. Young made some speculations on the case.

The idea of inviting Professor Arne Jacobsen to design the new buildings for St. Catherine's College, says a letter in *The Times*, is "the greatest slap in the face delivered to English architects since the Frenchman William of Sens was brought in to rebuild the choir of Cantebury Cathedral." Apart from the fact that this seems rather capriciously to ignore the slap delivered when the Scotsman Basil Spence of Edinburgh was brought in to rebuild Coventry Cathedral, I am not sure that it is a very sound sentiment, even though half a dozen other letters to *The Times* back it up.

Architecture, as architects are only too ready to point out at the drop of a theodolite, is an art, and art, as any artist will tell you, is international. Mr. Augustus John does not think it a slap in the face when the Tate buys a Picasso. Mr. Britten is not affronted when the B.B.C. performs a new cantata by Stravinsky, nor Sir Malcolm if they get Ansermet to conduct it. I don't know who the leading English architects were in 1175, but I bet they didn't boycott William of Sens when he landed at Dover with all his new-fangled Frenchified notions of how to build cathedrals.

And yet it seems, from the relative strength of the pros and antis in *The Times* correspondence, that to-day the majority of the architect's profession are against letting Professor Jacobsen build here. Perhaps architecture must be distinguished from pictures and music because it tends to be so permanent. You can always ship a Picasso back to

continued on page 208



Punch's tongue-in-cheek proposal for a "modern" St. Catherine's College at Oxford.

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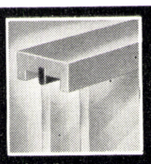
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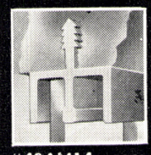
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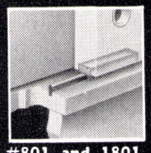
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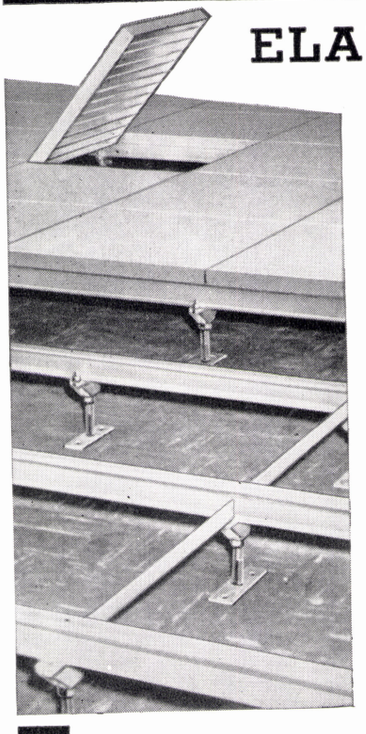

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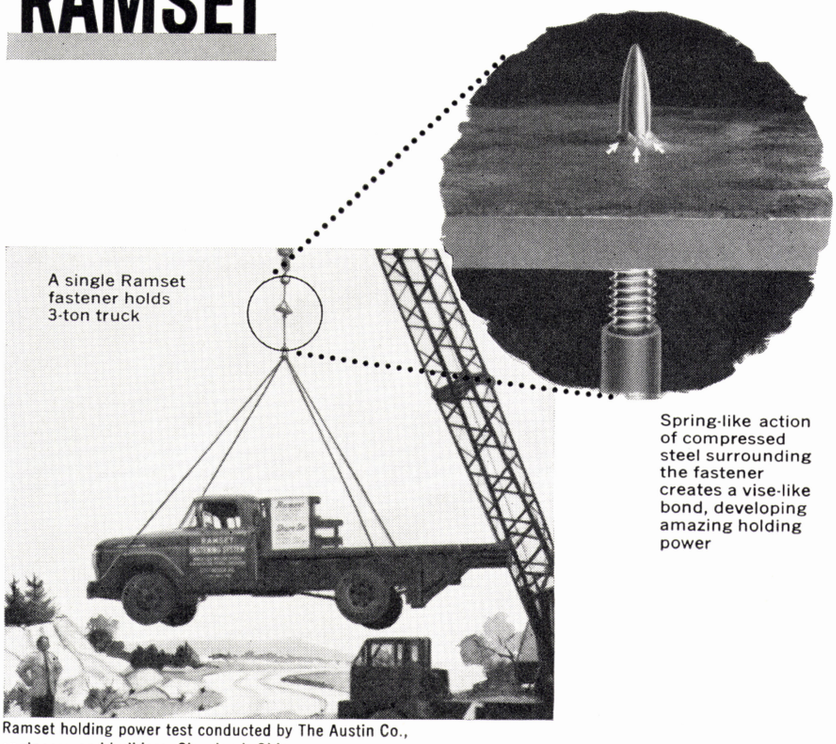

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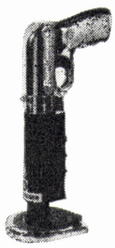

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France, but, once you have an Oxford college built, it stays in Oxford until it falls down, or is pulled down, or is destroyed by a nuclear device. You may admire foreign architecture as much as you like in the pages of the *Architectural Review*, but you musn't actually have it on your doorstep; it might be hard to get rid of.

MAKE IT LOOK LOVELIER

City Manager Ralph W. Snyder of Highland Park, Ill. looked askance at the four usual ways of dressing up a community in the February Inland Architect.

Heretofore, planned community appearance has been controlled through regulations in the interest of public health, safety, and welfare. This has been difficult to apply evenly and fairly, and many attempts have failed. Our efforts to date have stopped far short of the desired objective. In examining ordinances and regulations about this, it appears the approach to the problem falls into one or more of four categories:

1. The "Village Green" approach. This method is espoused by the ladies of the local garden club. It presumes that longer, lusher grassy swards, flowering trees, and evergreen shrubs practically guarantee the city beautiful. The only trouble is that everyone forgets about the whole thing, and one by one, uncared for, the trees die out, the bushes wither away, and the planting strip, designed to perk up the business district, is soon trampled into the dust by shoppers on dollar days.

2. The "Sweep it Under the Rug" approach. This method is favored in communities with down-at-the-heels neighborhoods or perhaps ratty-looking industrial or commercial areas, not quite bad enough to qualify for urban renewal but offensive to the refined taste of the people not living in such areas. The idea here is to wall the offending neighborhood in with screen planting, or establish a new use zone around it as a buffer; thus out of sight, the odious area is out of mind.

3. The "Ordered-Disorder" approach: Here the objective is to develop a plan which, in the end, will have the appearance of not being planned. This is accomplished by the liberal use of curvilinear streets and the variable building setback. We'll set each house at a greater or lesser distance from the property line than its neighbor—and we'll even turn them around on the lot.

4. The "Similar-Dissimilarity" approach. Civic organizations can be counted upon, in most communities to advocate this one. This requires that each house should be different from its neighbor in its design features. It makes no difference that it is a contemporary California ranch style flanked by a Cape Cod on the one side and an English stucco on the other—just as long as they are different. END

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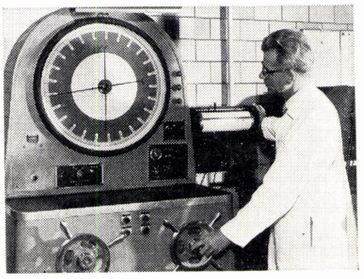

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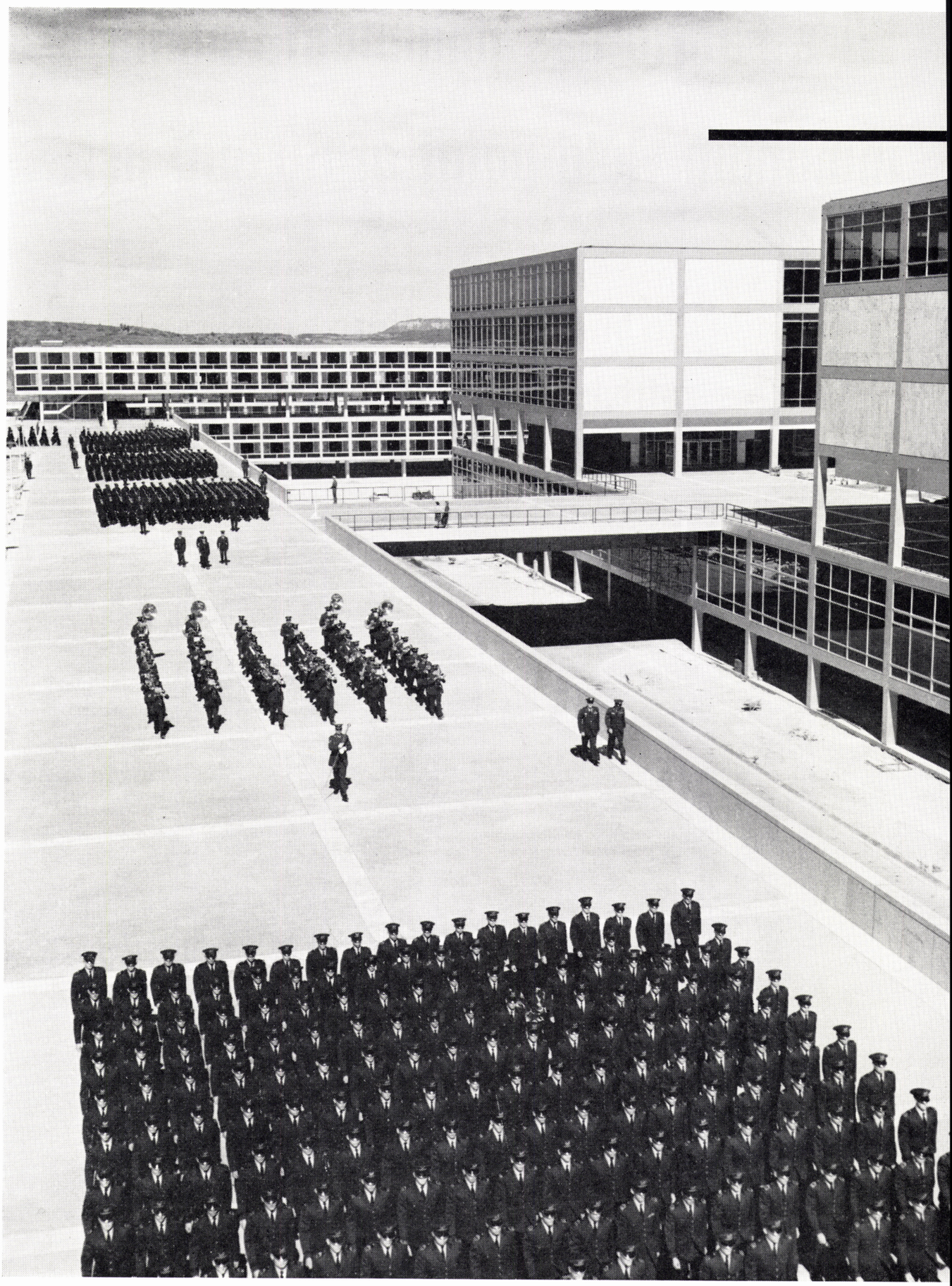

The new United States Air Force Academy perched at 7,200 feet above sea level near Colorado Springs and Pikes Peak.

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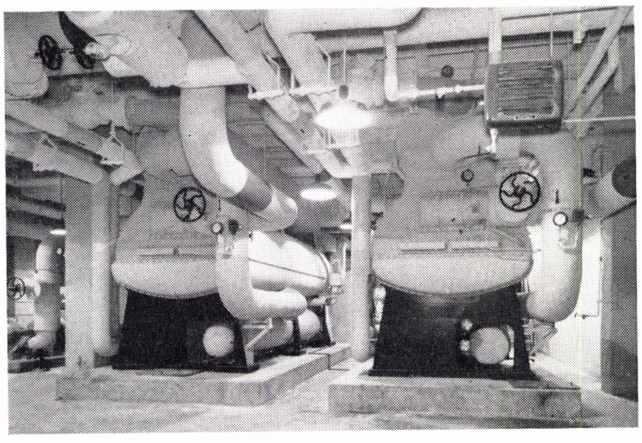

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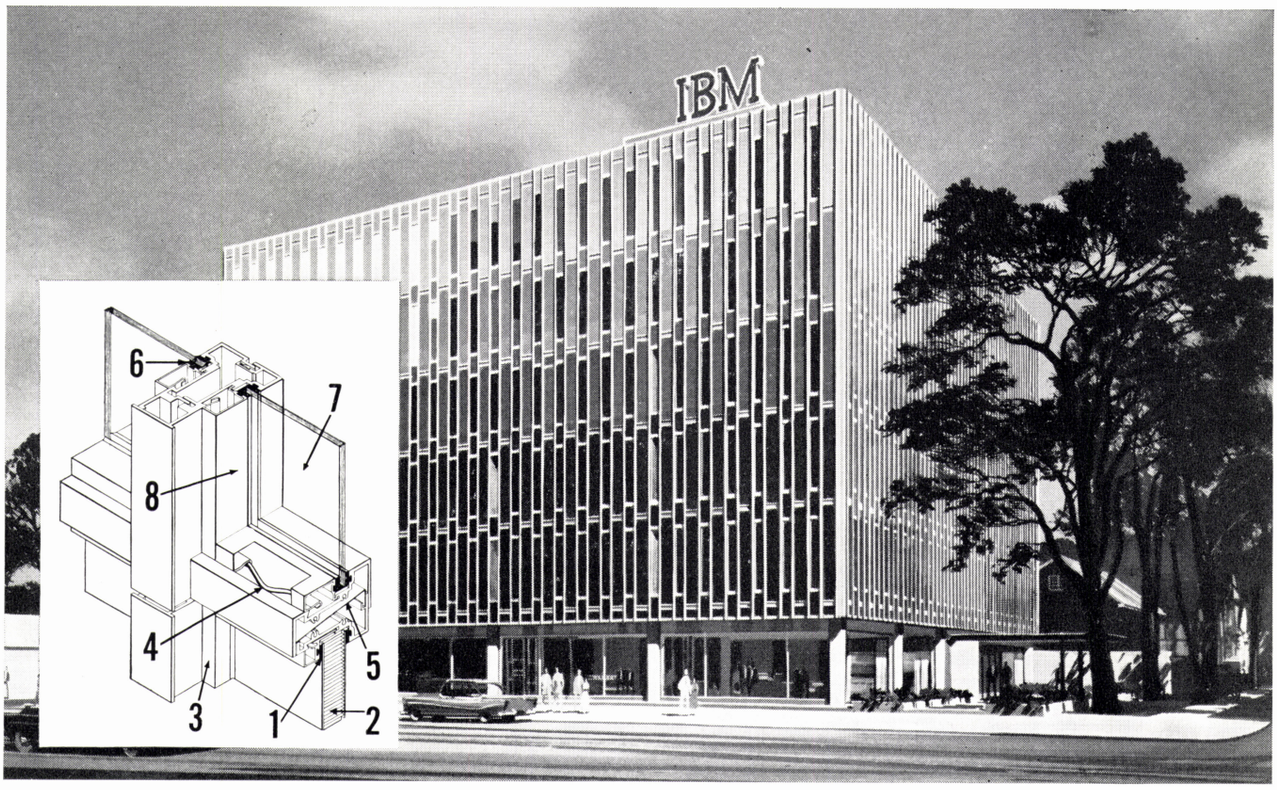

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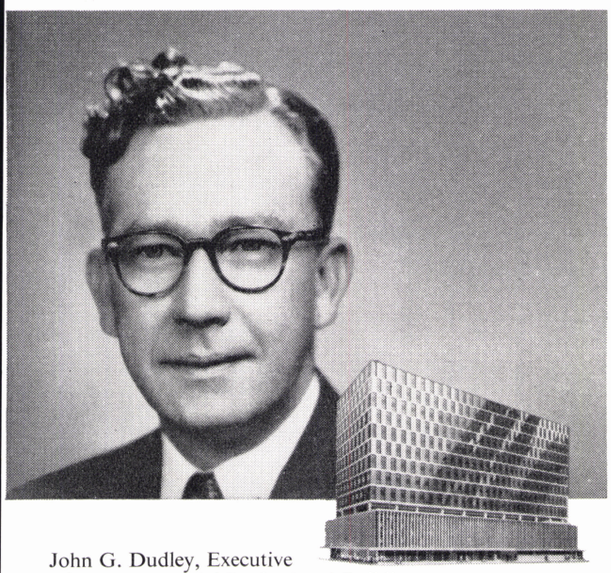

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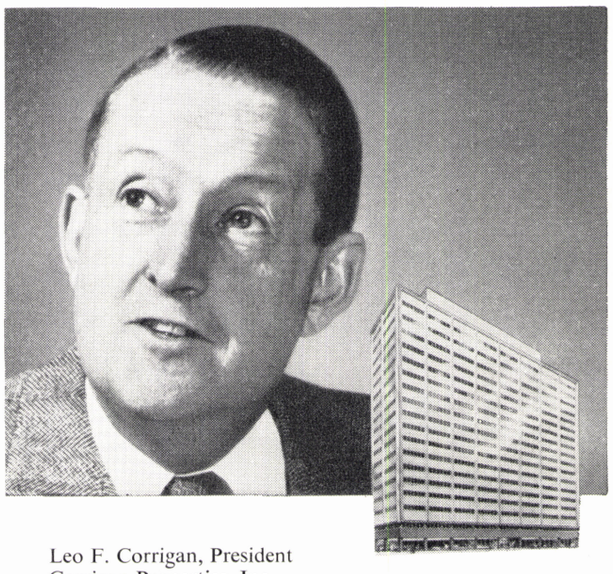

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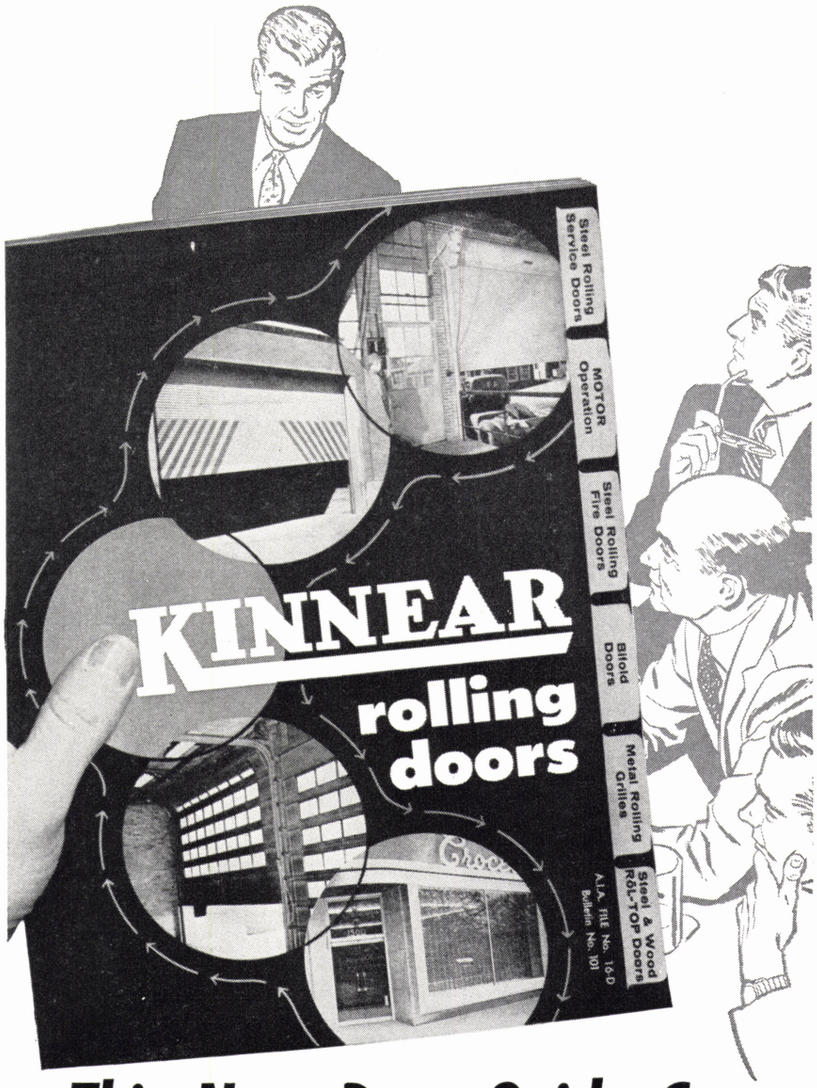

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there is deep respect and admiration for his initiative, few Japanese architects have taken to his style with the result that his influence on Japanese architecture is negligible.

GUNPEI MATSUDA *Tokyo*

I doubt that Wright had too much to do with spreading appreciation of Japanese art in the West because I feel that he assimilated oriental art and created a completely new form.

KENZO TANGE *Tokyo*

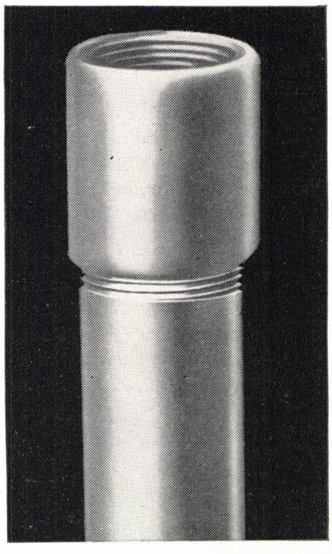
He personified the hope of the young twentieth century that there would come an Architecture of Our Time. His early Chicago houses, his Bear Run house, his Arizona camp are great demonstrations of such architecture—demonstrations of his independent and dedicated personality — reflections of the national dream and American phenomena: The Unlimited Possibilities. But, what I value most of his achievements is his sense of interior space, a liberated space; to be received not only by your eye, but experienced by your touch; dimensions and modulations corresponding with your steps and movements; embracing the landscape.

MARCEL BREUER *New York City*

Frank Lloyd Wright was the most original and the most creative architect of modern, and possibly all, time. Not so fully recognized is the fact that he expressed the underlying thought and spirit of our age, often times when he seemed most at odds with it: the possibility of infinite development and the freedom to become. This thought and this spirit provide the base for a new world architecture. Wright called this architecture "organic" and the creative process "natural," for it is the nature of an organism to grow and expand. Coupled with a fertility of imagination, there was in Wright a steadfastness to purpose, an attachment to principle, and a tough-

continued on page 242

First Security practices security by specifying **steel pipe.**



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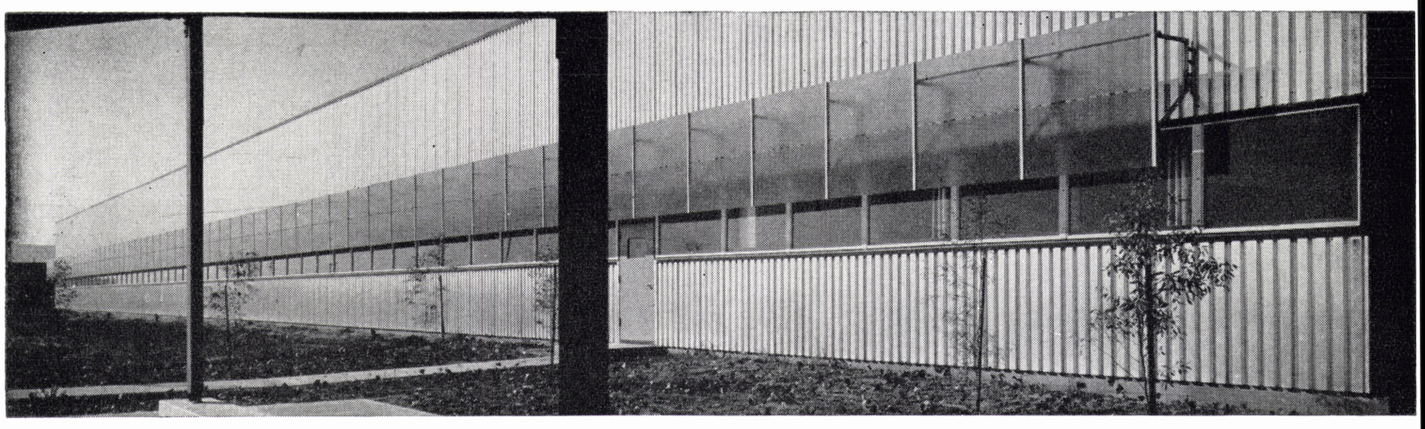
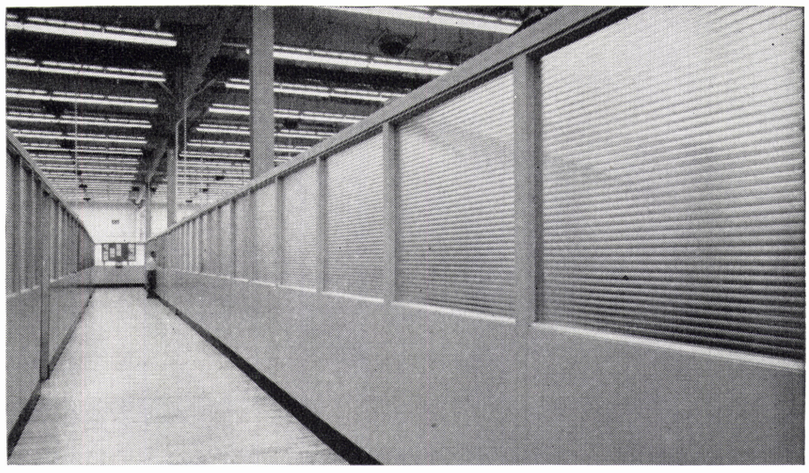


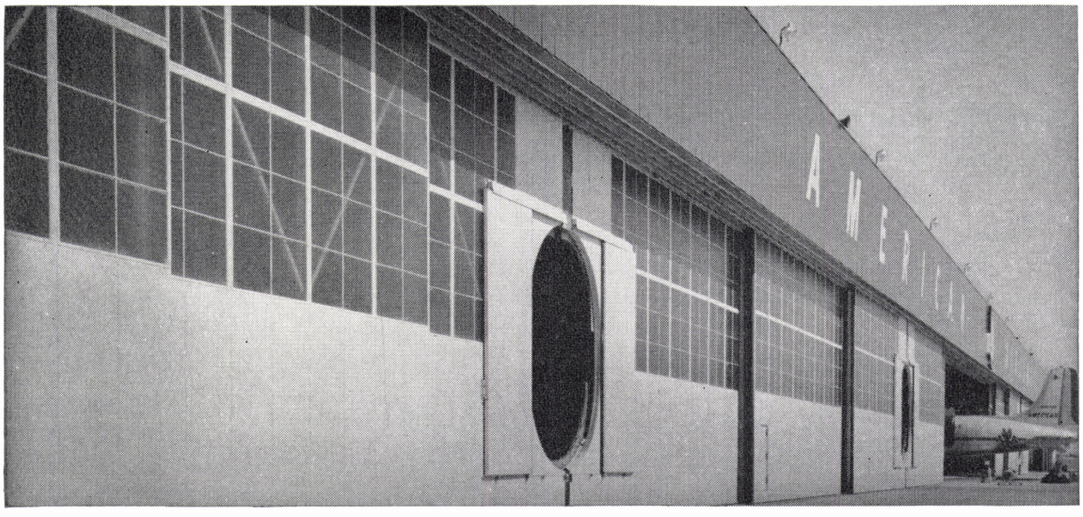
Architects: Marcel Breuer and Associates
Supervision: Craig Ellwood

A point of special architectural interest in the new Torrington Manufacturing Co. plant at Van Nuys, California is the sunshade of Coolite heat absorbing wire glass that spans the western elevation.



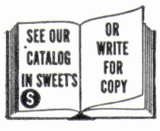
Complementing the spectacular new IBM offices in San Jose, California are these Hauserman partitions, glazed with lustrous Mississippi Broadlite glass.

Architect: John S. Bolles, San Franciso, Calif.
Partitions by: E. F. Hauserman Co., Cleveland, Ohio



1260 lights of ¼" Coolite Wire Glass provide better daylight with protection, while absorbing excess solar heat in expansive American Airlines Hangar at Los Angeles International Airport.

Architect: Quinton Engineers Ltd., Los Angeles, California
Glazing by: W. P. Fuller and Company, Los Angeles, California



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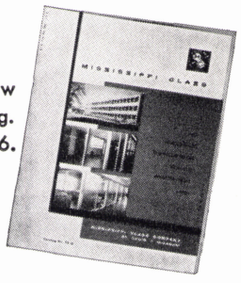

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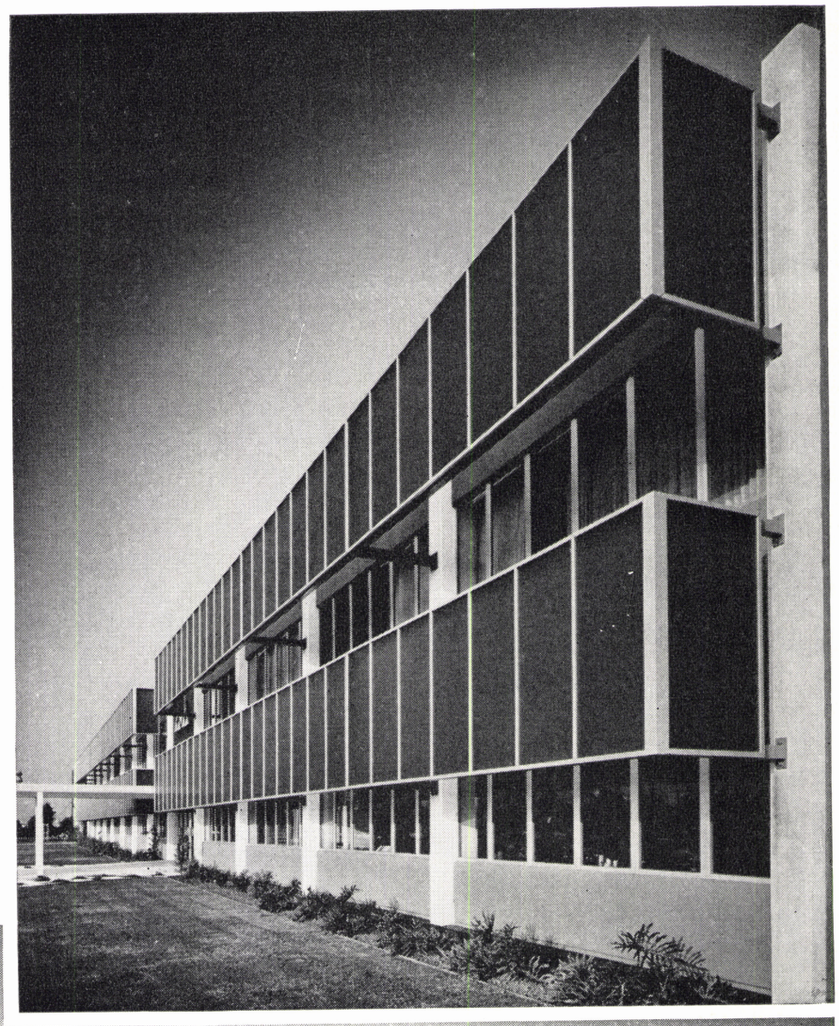
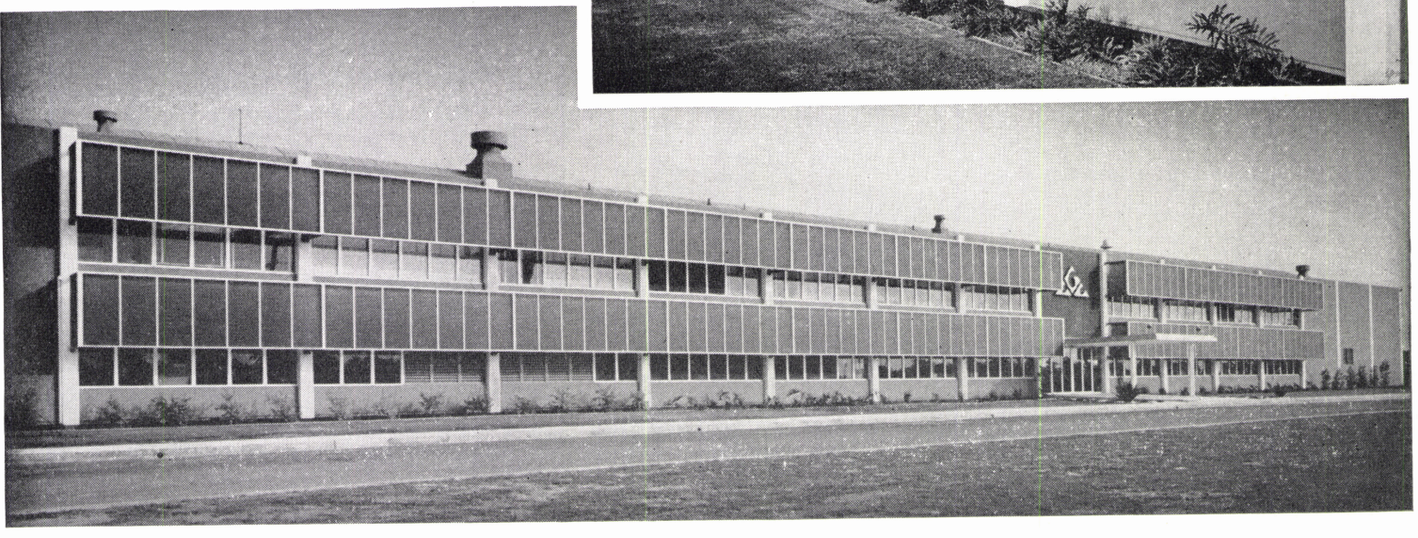
Growers Container Corporation, Fullerton, Calif.
Architect: Falk and Booth, San Francisco, Calif.





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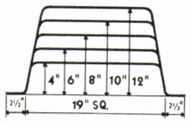

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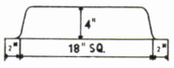

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Tributes to FRANK LLOYD WRIGHT

continued

ness of character almost equally rare. With them he was able to continue his own course whether appreciated or neglected. Without them, few products of his genius would be ours today. Finally, he did more than any other architect to destroy the anonymity of the artists, and for this, too, architects and society should thank him.

HARWELL HAMILTON HARRIS *Dallas*

More than 30 years ago I wrote of Wright—curiously enough in French—"He remains, the time has come to say without restriction, the greatest architect and perhaps the greatest American of the first quarter of the twentieth century." Except for noting the irony of the actual restriction in the statement to the first quarter of this century when his productive career was in fact destined to continue through the second and well into the third quarter, what more can one say briefly of him today? He set his eyes on greatness early, and to the last found ever new expressions of his genius.

H. R. HITCHCOCK
Northampton, Mass.

For those of us who worked with him and were inspired by his cause, the greatest beacon of our time has been extinguished. His light was bright and crisp to the very end. The world should be grateful that this beacon shone so long with such a wondrous light, moving men away from conformist, organizational, and mediocre thought to romance and individuality. And this beacon will have an endless light through his work and spirit.

EDGAR TAFEL *New York City*

No influence of one architect upon the architecture of his time has been greater than that of Wright upon the architecture of the first half of this century. The influence is less direct now than it was ten years ago, but it is not less impor-

continued on page 246

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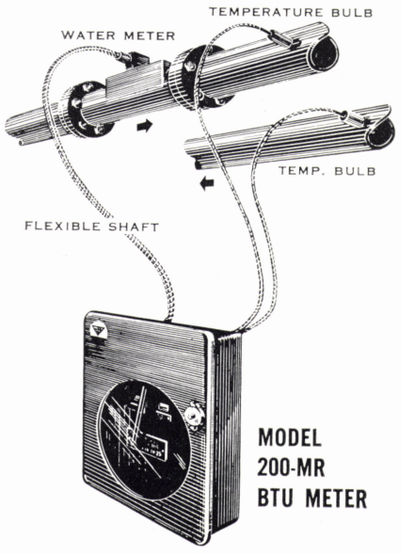

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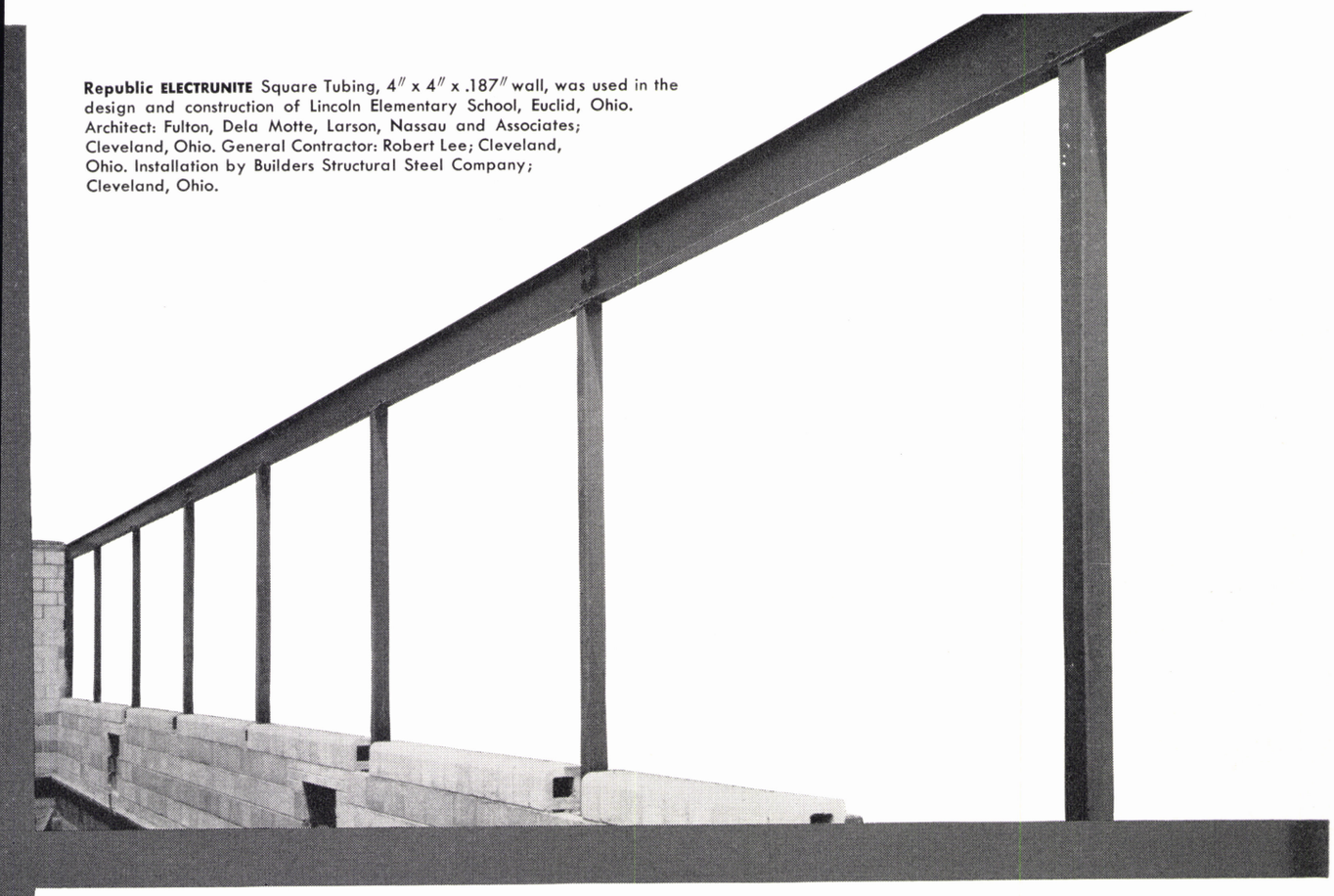
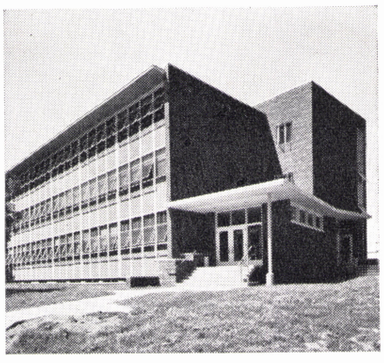


Republic ELECTRUNITE Square Tubing, 4″ x 4″ x .187″ wall, was used in the design and construction of Lincoln Elementary School, Euclid, Ohio. Architect: Fulton, Dela Motte, Larson, Nassau and Associates; Cleveland, Ohio. General Contractor: Robert Lee; Cleveland, Ohio. Installation by Builders Structural Steel Company; Cleveland, Ohio.



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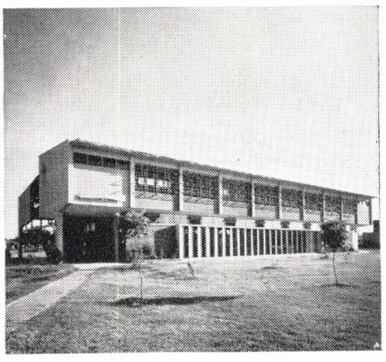

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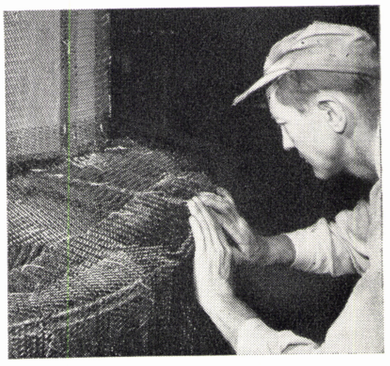

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tant on that account. New forces, new directions are being shaped from a legacy of individual courage, independent thought and action. Wright discovered no new principles of construction, no new laws of form. More importantly, he rediscovered the use of space—inside, outside, in between. A few of Wright's buildings suggest an indifference to structure. None is indifferent to human dignity. Wright has left us no formulas for certain beauty; he has not even established one sure module of perfection, but there are 700 buildings, each by his own hand, each an example of unique beauty—and there is the history and life of a great man.

PAUL SCHWEIKHER *Pittsburgh*

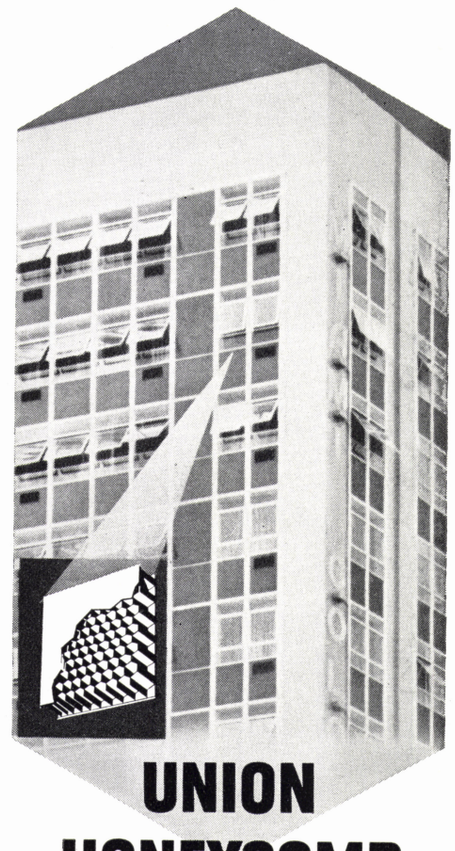
Frank Lloyd Wright remained until the end an architect of the art nouveau. His buildings were, with rare exceptions, private worlds into which artifacts from the outside entered with difficulty. At the turn of the century there were two really important architects, Wright and C. R. Mackintosh. Both men included in their vocabulary highly developed rectangular systems of building derived presumably from a common oriental source: systems of square-sectioned, overlapping, obviously jointed, natural finished constructions, which could be extended to light fittings, to furniture, and to decoration.

Neither man used this system exclusively, but it was this particular manner in the hands of Wright which was seen in Europe before 1914; and the sense of liberated space that went with it fired the imagination of the generation of Rietveld, Mies, and Le Corbusier. It was as if a door had opened on a new world! That world they constructed for themselves, and it was in fact a world full of light and the spirit of ordinariness quite opposed to art nouveau—one which the master found unacceptable to the end.

Frank Lloyd Wright was seminal to the architecture of the twentieth century.

PETER SMITHSON *London, England*

END



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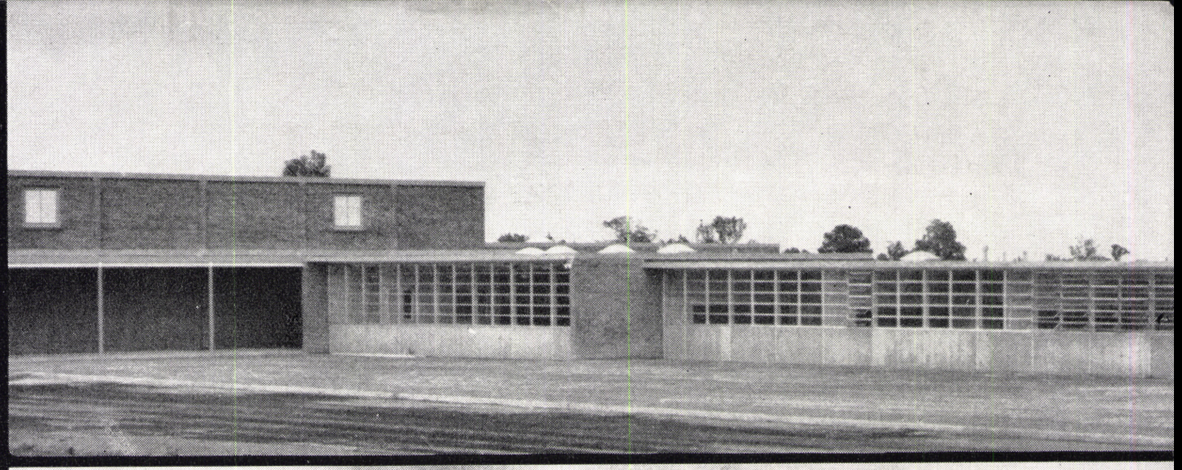
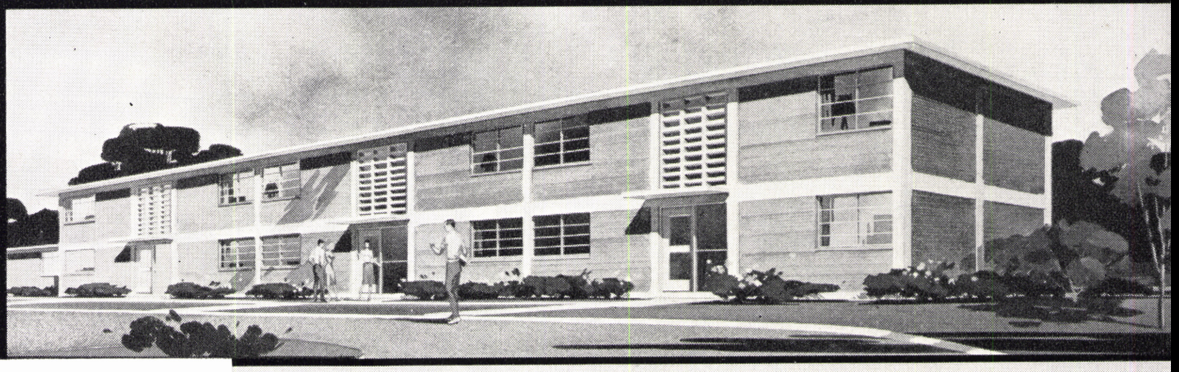


MISSISSIPPI—Whisenton School, DeKalb. Keywall used in every third course of exterior and interior concrete block walls. Architect: Bill Archer, Meridian. General Contractor: B & M Construction Company, Meridian.



MISSISSIPPI—One of the fourteen apartment buildings being constructed for married students on the University of Mississippi campus, Oxford. The buildings are of concrete and masonry construction, reinforced throughout with Keywall. Architect: Thomas H. Johnston, Jr., Starkville. General Contractor: J. W. Rich Construction, Humbolt, Tenn.

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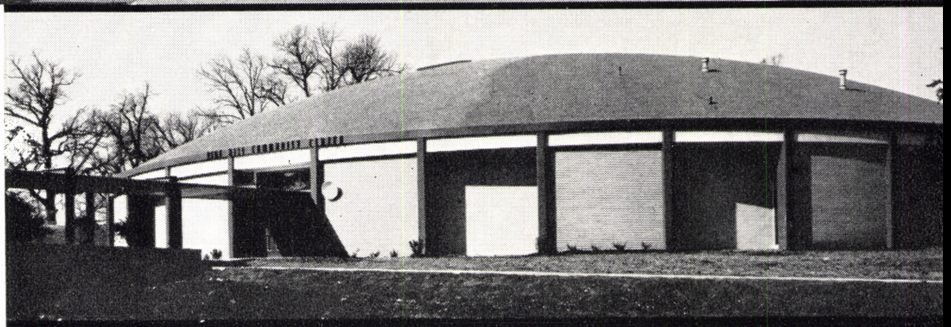
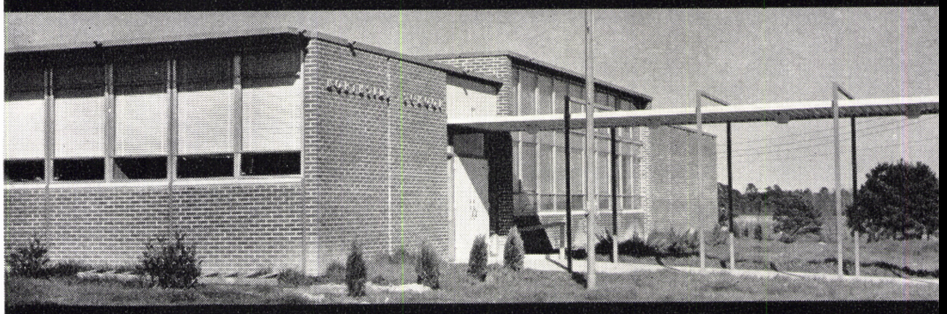


TENNESSEE—Pine Hill Community Center, built for the Memphis Park Commission. By reducing shrinkage cracks, Keywall gives longer life to the beauty of this building. Architects: Mann & Harrover, Memphis. General Contractor: W. F. Jameson Construction Co., Memphis.



MISSISSIPPI—The Northside Elementary School, Kosciusko. One of the many buildings designed by William I. Rosamond, architect, Columbus, on which Keywall was specified. General Contractor: Fenwick Brothers Construction Company, Kosciusko.

ALABAMA—Dill Hall, student dormitory, Troy State College, Troy. Keywall is adding greater crack resistance to this attractive building. Architect: Pearson, Tittle & Narrows, Montgomery. General Contractor: Henderson, Black & Greene, Troy.

that by raising foot-candles, children will no longer make mistakes in their arithmetic."

In the school field, where proper lighting is so important, there is real hope that an eminently workable guide to good lighting will soon be available, dealing with total environment rather than solely with lighting levels. This should mean that educators, school boards, and architects will be able to achieve the lighting quality standards they desire. Justification for such hope is largely due to the success with which the members of the joint task committee have been able to work out their differences. Indeed, the formation of the body was an event in itself, but their agreement on a set of lighting principles was perhaps even more unprecedented. The work of the committee was divided so that the educators outlined the principles upon which good lighting design should be based; lighting engineers outlined the techniques which would achieve these principles; and the architects studied how these techniques and principles could be translated into good schoolroom design. Their document, now in rough form, is expected to be ready within a year.

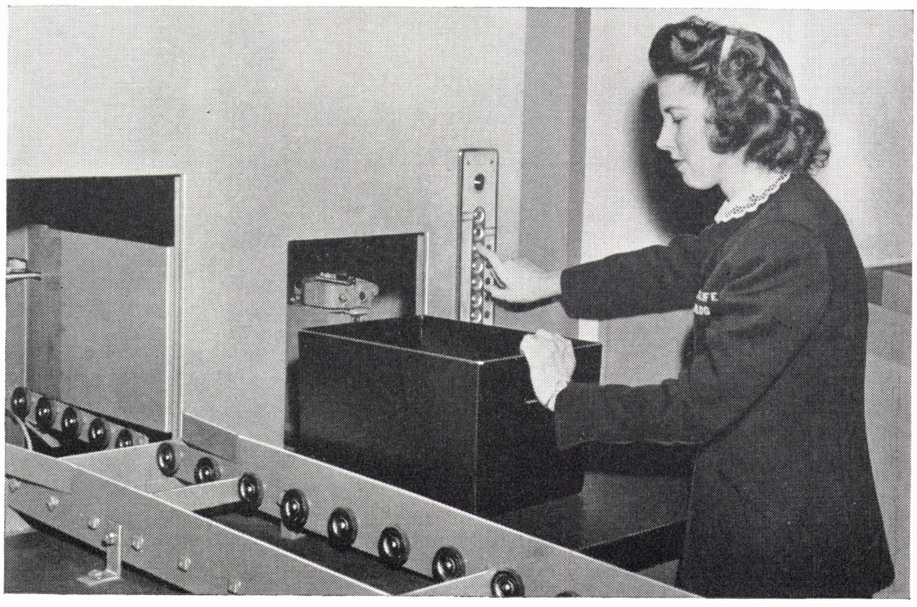
The complexity of light

A new school lighting guide is more important now than it was 20 years ago because the elements in improving school lighting are now quite different. For example, in 1935 the general level of schoolroom illumination was about 15 foot-candles, an unsatisfactory level, and any upward push—if only to 20 foot-candles — would almost certainly produce a better-lighted environment. But today, when schools are lighted at higher levels (the average is 30 to 50 foot-candles), lighting quality cannot be improved simply by boosting the illumination levels still higher. Further, at current levels, the lighting is adequate for many school tasks, though not for all, and there is real justification in questioning the wisdom of raising the general level from 35 to 70 foot-candles, as the lighting industry proposes. The fundamental question must be asked: with twice the illumination, is the lighting necessarily twice as effective? Seventy foot-candles *can* much improve illumination, as the scientists' data indicates; but there is no guarantee that this will happen, as their data also indicates. A 70 foot-candle installation, if poorly designed, can be inferior in quality to another system of much lower light output. The reason: at higher illumination levels, factors other than foot-candles, such as discomfort glare, gain new significance.

As the school guide will show, good lighting cannot be determined with a light meter alone, nor can it be achieved solely by esthetic intuition, for these elements, taken alone, ignore the body of knowledge which is growing within the seeing science. A review of some of the current research indicates how the work of scientists is soon to change certain concepts of electric lighting:

▸ At the University of California, in work dealing with schoolroom lighting, Dan M. Finch has measured the undesirable effect of reflected glare on

continued on page 254



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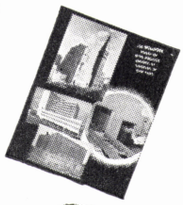

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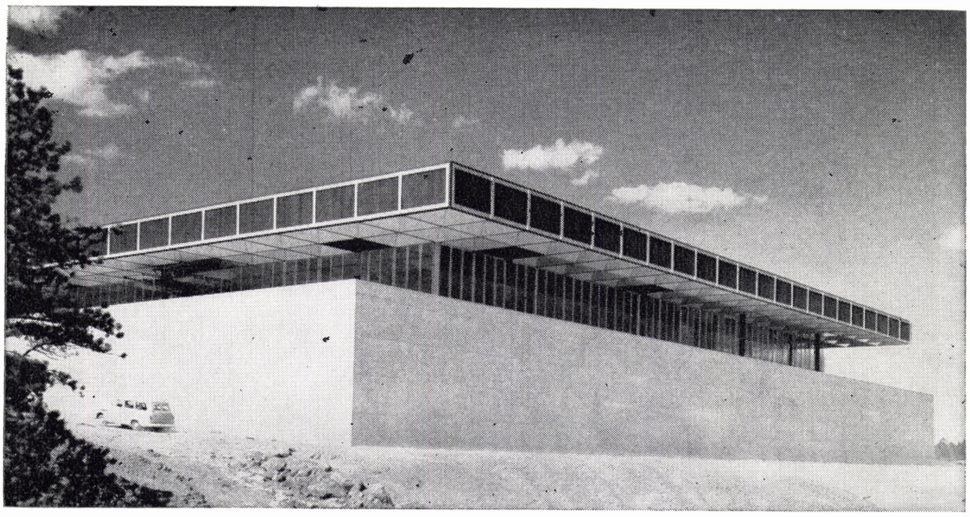
Academic area: Looking through cadet room window to courtyard. The Academic Building in the background, one of the major buildings in the project, utilizes 625 tons of aluminum; the Cadet Dormitory itself, about 845 tons. Total aluminum in project will be about 2,525 tons.



Southwest elevation of Cadet Dining Hall, structurally the most unusual building of the present group. There is not a single inside column within the two-acre area: the roof is supported entirely by trusses across the entire 266-ft span. Doors, acoustical ceiling suspension, and trim are of aluminum. Walls, suspended from the trusses, stand on rubber cushions to absorb vibration and building movement.

At the Air Force Academy...
SOME "DOWN-TO-EARTH" REASONS FOR ALCOA ALUMINUM

Ask a dozen architects about the reasons for aluminum in the new Air Force Academy and you're apt to get a dozen answers—all of them right. Its sheer architectural fitness. Its lightness. Its color match, and the color itself: a special gray of Alcoa alloys to harmonize with the environment and landscape. And, most practically, the extreme freedom from maintenance that modern aluminum makes possible. In fact, the new Academy is probably the most maintenance-free project of its size ever created anywhere!

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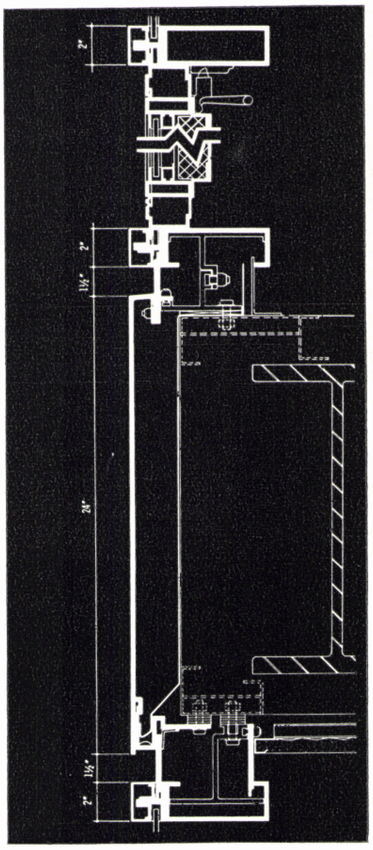


Design detail for the six-story Academic Complex, containing cadet classrooms and library, illustrates unusual features in the use of aluminum. Beam jackets, 24 in. wide, and column covers, 21 in. wide, are one-piece extrusions—*the largest ever produced for architecture.* They were formed on Alcoa's 14,000-ton press at Lafayette, Indiana. The architectural objective of these sizable extrusions was to provide a four-sided beam cover with no outward evidence of any joints or fasteners. Ingenious design, utilizing integral fasteners, achieved the intended effect.

visibility. Note the two photos (page 169): each is lighted at the same level of illumination, but the bottom photo is washed out and difficult to read. Reflected glare is the reason for this, indicating the importance of reducing the downward concentration of light or, where possible, properly orienting lighting for good visibilty. Thus, Finch's work is important to consider in conjunction with Blackwell's.

▸ In England, Ralph G. Hopkinson, principal scientific officer at the Building Research Station, is studying the problems of discomfort glare from large lighting sources, such as large windows and overhead troffers. His results indicate that brightness is less uncomfortable if the area surrounding the light source is also lighted. In terms of room lighting, this suggests that a ceiling fixture will be more tolerable if some of its light energy is directed upward, illuminating the ceiling, and thus causing less contrast between ceiling and fixture. An extension of Hopkinson's work is being carried on at Cornell University, where he worked last year; Cornell scientists hope to determine how bright large window areas can be and how bright the luminous areas of electric lighting can be, without causing discomfort to the eye. At Ohio State, Glenn A. Fry is dealing with a similar problem, but in terms of the eye's pupil and how it reacts to intermittent stimulation, such as a bright window area.

Architecture and light

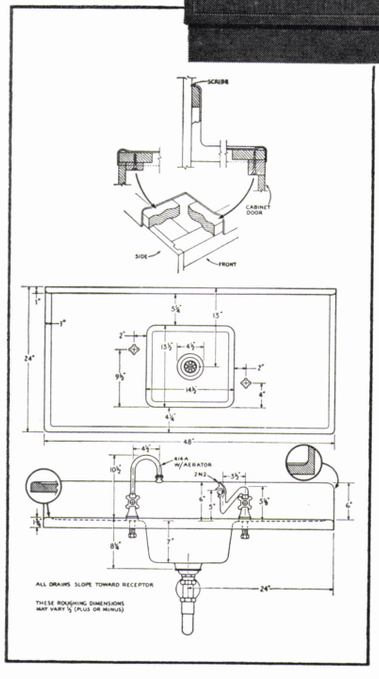
If literally interpreted, the scientists' results could lead to a uniformly lighted environment, e.g., luminous ceilings, as the best way to light future buildings. This would be basing lighting requirements solely on scientific calculation, without considering the less measurable architectural determinations, such as which environment looks best or is most pleasing to its human occupants. Carried to its ultimate extreme, this "scientific" approach would produce a highly functional but highly bland environment in which color, texture, shadows would become subordinate to lighting uniformity.

This is not a desirable end, as many of the scientists themselves agree, but it is the bland environment which will prevail unless scientific lighting can be blended with building design. Scientist Dan Finch recognizes the problem: "Modern schoolrooms, with their movable seats and desks, almost dictate a uniformly lighted ceiling." Otherwise, some areas will be better lighted than others, so that certain desks will enjoy good light while others will be poorly lighted. But Finch, in accord with the architects, finds that such uniform lighting is no ideal solution. "There are no shadows," he says.

Lighting, like the field of acoustics and noise control, is both art and science. And because it is both, it is not well understood by those who must apply it, whether they are architects or electrical engineers. Says B. F. Winckowski, chief of the electrical division of New York Architects Voorhees, Walker, Smith, Smith & Haines: "The integration of lighting with total en-

continued on page 258

one piece fiberglass deck-type



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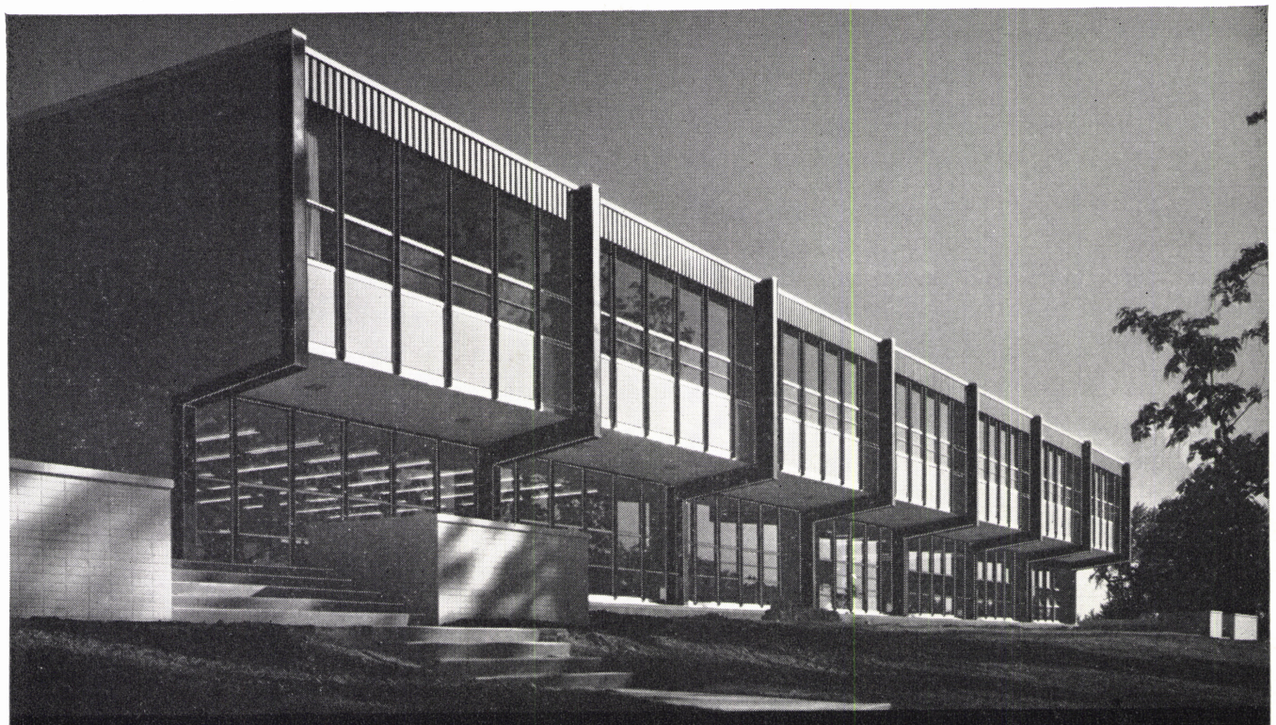

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Hickory Grove School, Pontiac, Michigan. Architect: Smith, Tarapata, MacMahon, Inc.; Contractor: Bundy Construction Company.

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Multicolor lacquer enamel is manufactured under license from Coloramic Coatings, Inc., Los Angeles (U. S. Patent No. 2,591,904)

*Multicolor lacquer for all applications shown here is Zolatone, manufactured by Zolatone Process, Inc., Los Angeles, and distributed by M. Buten & Sons, Philadelphia.

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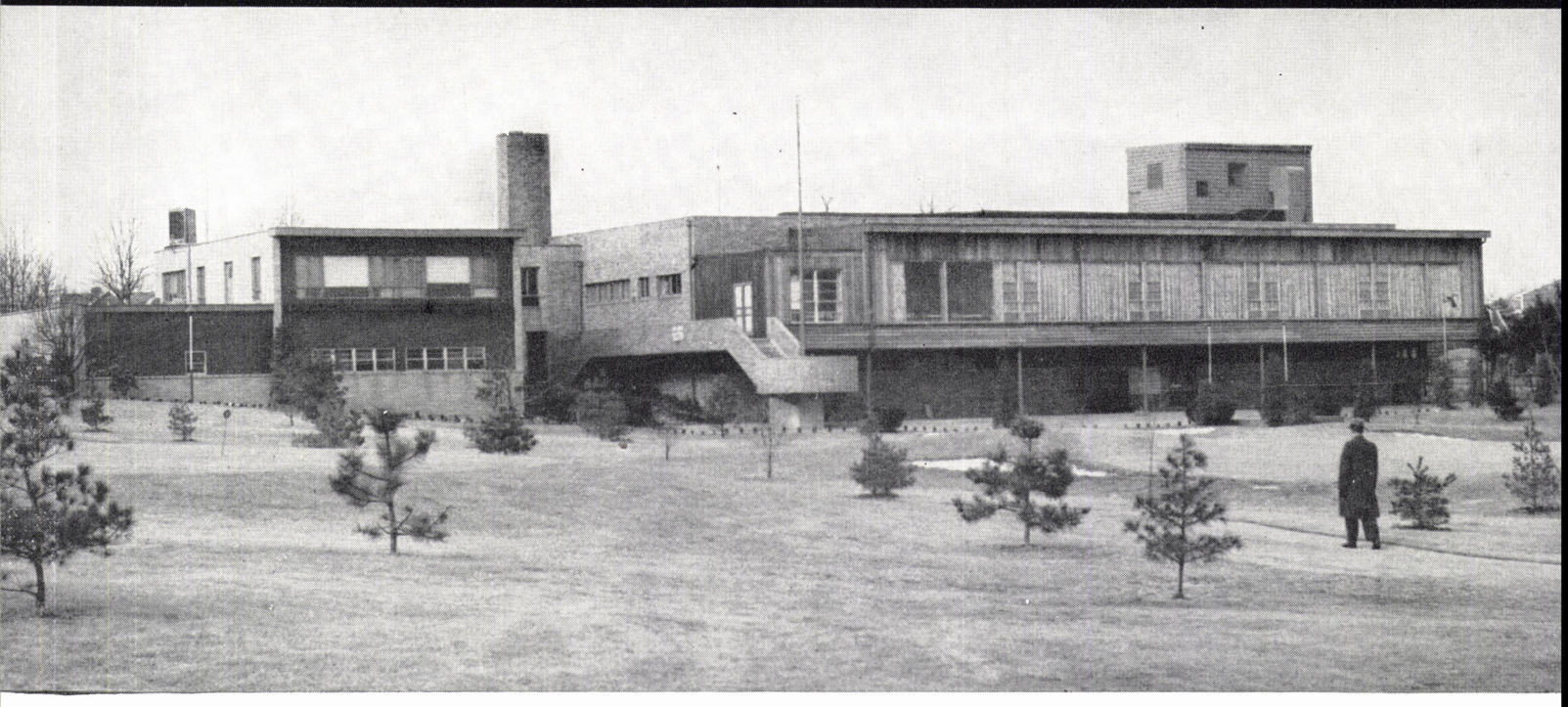

AT PLAY—The Green Valley Country Club makes extensive use of bright, decorative multicolor lacquer* in the lobby, bar, and the locker rooms—where high humidity is a challenge to any finish. Specifying architects were Demchick and Supowitz, Philadelphia.

AT THE OFFICE—For economical maintenance, interior offices and meeting rooms of the Deborah Foundation are finished with multicolor lacquer* that provides a pleasing background for the day's activities. Specifying architects were Supowitz and Demchick, Philadelphia.

AT HOME—The Elkins Park House, one of Greater Philadelphia's most modern apartments, uses easy-to-clean multicolor lacquer* for tasteful accent in the lobby and corridors. Specifying architect was Aaron Colish, Philadelphia.

AT THE MARKET
Multicolor lacquer* was used on the wall of this Penn Fruit market to accentuate the aluminum paneling and set off the modern decor of this new shopping center. Specifying architect was George W. Neff, of Philadelphia.

This advertisement is one of a series prepared to explain the suitability of multicolor lacquer enamels for a wide variety of architectural applications.

vironment requires a careful handling of the glare problem as well as an attainment of good color balance. And, unfortunately, not all architects can do this. At the same time, engineers do not always appreciate the esthetic aims of the architect."

Indeed, this is one of the major challenges of architectural design. At this moment, the advances in lighting technology and the lighting science are far ahead of architecture's ability to use them. The Blackwell Report, as a wise educator points out, is only research until it is applied, and its success will depend upon those who interpret it. If some intelligence is not brought to the interpretation of the scientists' findings, they will be turned into mere promotion and resisted by architects and building owners who will suspect trickery in the guise of science.

But with wise application, these scientific developments will surely yield better lighting, a more pleasing, more efficient environment, and, axiomatically, a higher level of architecture.

The cost of more light

If illumination levels continue to rise, as seems probable, what will be the effect on the cost of building and building operation? After careful study, Robert Nevin, chief electrical engineer for Architects Sargent, Webster, Crenshaw & Folley of Syracuse, warns that the total cost of more light may be more than is indicated by lighting costs alone. The reason: higher light levels generate more heat and require, in some instances, that the space be provided with air conditioning.

In a space which would be air conditioned in any case, regardless of illumination levels, the added cost of more light will not be great. For example, in designing a 100 ft. by 100 ft. air-conditioned office space, with 10 ft. ceiling, lighted at the now general 50-foot-candle level, with suspended equipment, current costs run like this:

- Initial cost of air-condtioning installation: $40,000 ($4 per sq. ft.).
- Initial cost of lighting installation: $6,700 (67¢ per sq. ft.).
- Air-conditioning operating cost: 80¢ per hour.
- Lighting operating cost: 31¢ per hour.

When this space is designed for an illumination level of 100 foot-candles, the costs increase roughly as follows:

- The air-conditioning installation increases to $48,000 ($4.80 per sq. ft.).
- The lighting installation increases to $8,600 (86¢ per sq. ft.).
- Air-conditioning operating cost increases to 95¢ per hour.
- Lighting operating cost increases to 62¢ per hour.

Thus, initial costs go up by 99¢ per sq. ft. and operating costs up by some 46¢ per hour.

However, when higher illumination levels in the same sized space necessitate a completely new air-conditioning installation the added cost becomes significant. In this example, initial costs go up by $4.99 per sq. ft. and operating costs go up by $1.26 per hour.

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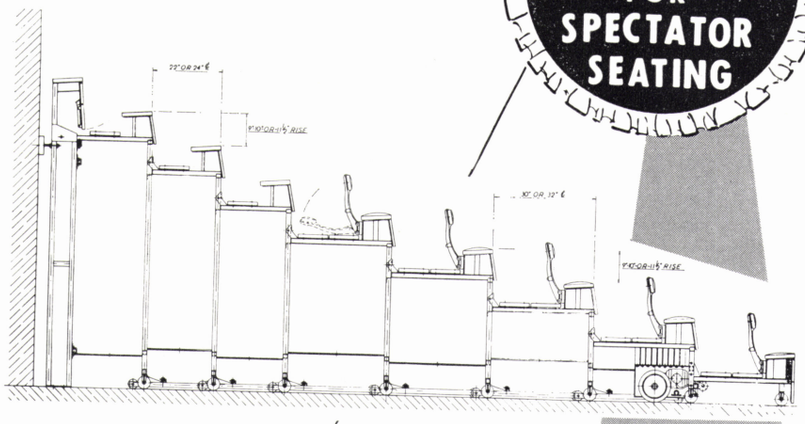

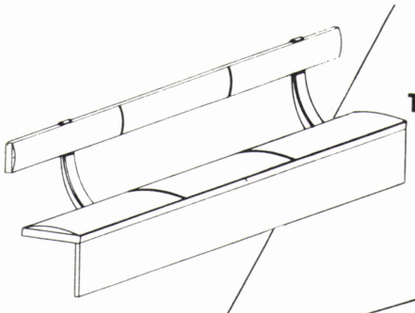

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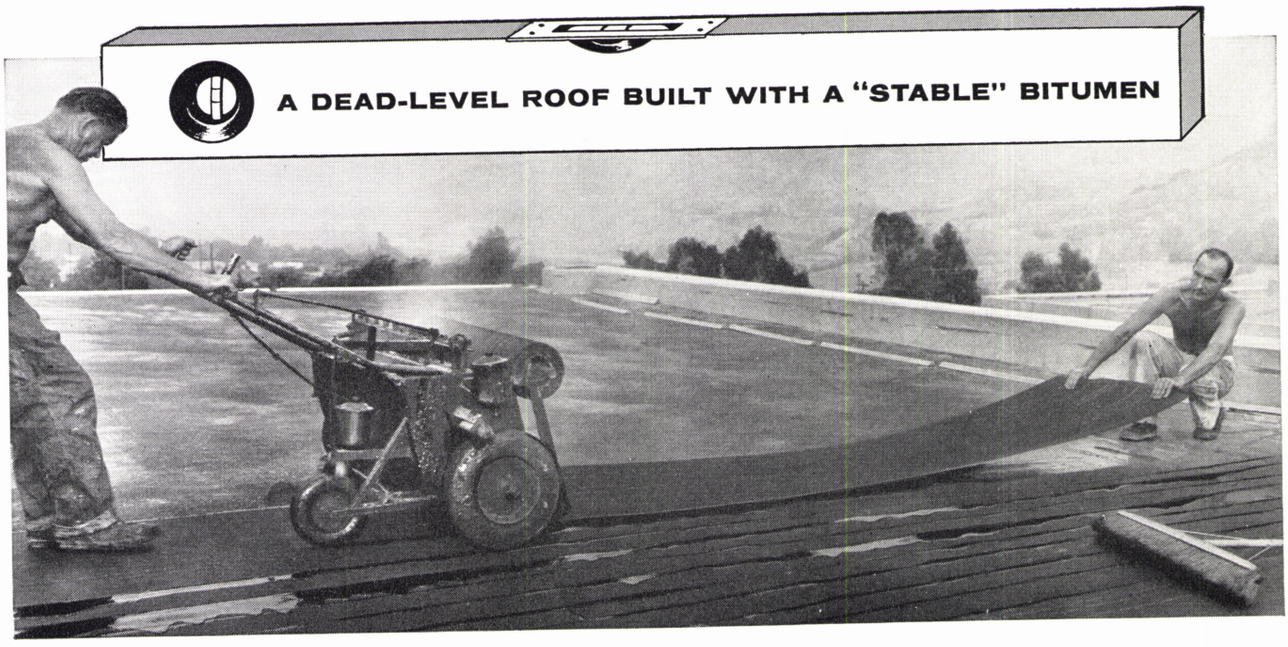

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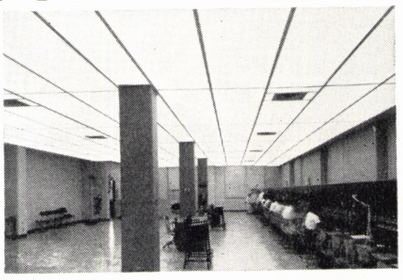
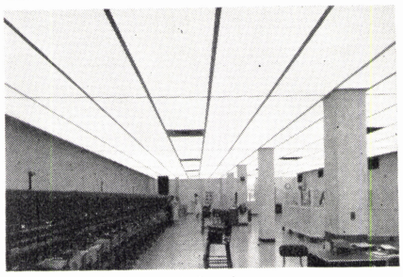


Installation of Contrex Soundsheet — Operating Room, Forest Hills Telephone Building, New York Telephone Company.



Soundsheet installation in Operating Room, Smithtown Telephone Building, New York Telephone Company.

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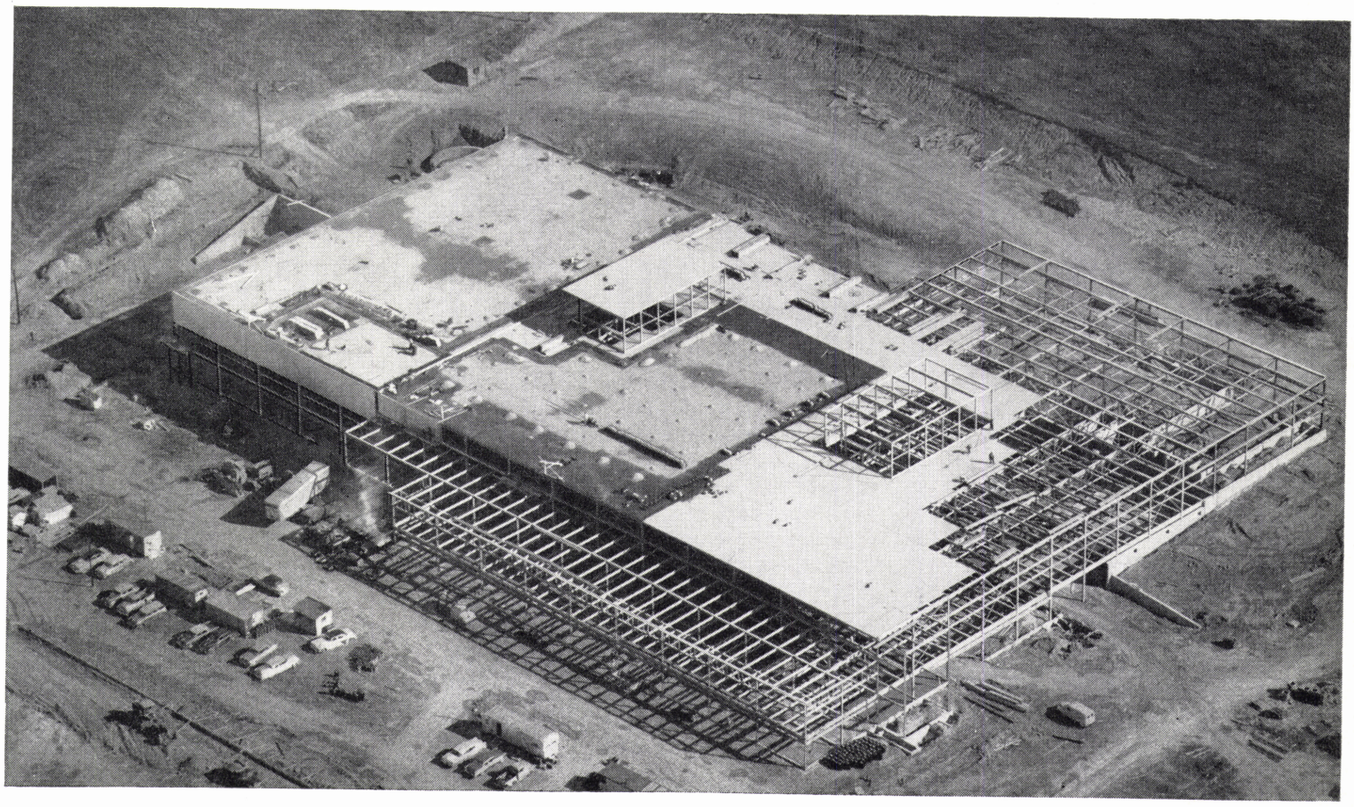

Steelwork for Sylvania's new Altoona plant by American Bridge

THE large and handsome building shown above is the new receiving tube plant of Sylvania Electric Products, at Altoona, Pennsylvania.

This 310′ x 400′ two-story steel-frame building provides 190,000 sq. ft. of manufacturing space—enough to replace two smaller tube plants, with room to spare.

Here again is another progressive industrial firm which plans its manufacturing facilities with an eye to the future. For, whenever it becomes necessary to further expand its Altoona operations, the steel-frame structure can be readily extended up or out to accommodate any amount of additional space.

And it can be done in any weather . . . in less time . . . with less inconvenience . . . and usually at considerably less cost with steel than with any other material.

American Bridge fabricated and erected 1,082 tons of structural steel for this job. If you would like to know more about the advantages of having American Bridge handle the steelwork for your next building, just contact any of the offices listed below.

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Letters from readers:
Taliesin's architect . . . Cleveland's slum . . . Grand Rapids' furniture

Dear Mr. Philip,

My definition of Architect:

arch = chief or highest (i.e. archbishop, archetype = Master)
+
tect = technique, technology (i.e. the Know-How)
=
Architect: Master of the Know-How.

Sincerely,

Frank Lloyd Wright

WRIGHT'S ARCHITECT

Forum:

A few weeks before Frank Lloyd Wright's death, my 14-year-old son Jerry, whose interest in architecture is something more than casual, wrote this world's greatest architect at Taliesin West and asked for his definition of "architect."

I cautioned my youngster not to be too optimistic about hearing from Mr. Wrignt: the best he might expect would be a reply from someone on Wright's staff.

But sure enough, in about ten days, my son received a reply from Wright himself.

Perhaps your readers will be interested in Wright's definition (left).

JOHN J. PHILIP
South Bend, Ind.

Forum:

FORUM and tributing architects (May '59) seem to have missed the point about Frank Lloyd Wright's greatest legacy: that through his awareness of the value of publicity he created more public recognition of the term "Architect" than any other man in our time.

GEORGE C. RUDOLPH, *architect*
Rudolph Associates
New York City

■ *Reader Rudolph and others interested in* FORUM'S *collected tributes to Frank Lloyd Wright will find more in this issue, on page 234.*—ED.

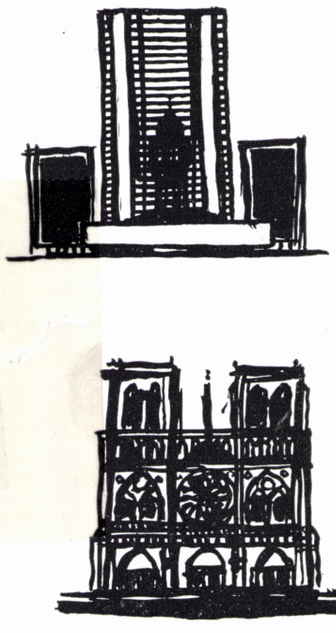
UNETHICAL FUN

Forum:

For a number of years I've been a thorough reader of your publication. I'm familiar with all your efforts to raise the level of modern architecture in your country.

Herewith is a study (left) for the proposed new office building to be built on top of New York City's Grand Central Station. If it were built of two parallel slabs with a transparent center between them, one could see the existing tower behind it. I don't know whether my pictorial analogy between the Grand Central proposal and the two great towers of Notre Dame (with their transparent center through which one can see the spire of Viollet le Duc) is correct. But, in any case, I've had some unethical fun.

MARTIN PINCHIS, *architect*
Bucharest, Romania



GLITTERING SLUMS

Forum:

Your story, "The Glittering Slum on Main Street," justifies a little criticism.

You name municipalities as the prime villain in what is happening on Euclid Avenue. You seem to infer that "sensible zoning, traffic, and parking controls" are something that have all been neatly laid out, packaged, and set on a shelf so that all someone has to do is come along, pick them off, and put them into use.

A city's basic duty is to protect the health and welfare of its people. Both of these are difficult to pin down, but no one has yet assumed that artistic welfare has a right to supersede economic welfare.

Cleveland's Euclid Avenue of yesterday was an avenue for rich people. The average Clevelander was carefully excluded. Since rich people lived there, it naturally was of interest to architects because architects love rich clients. This is understandable.

Euclid Avenue of today is the place of employment of thousands of average Clevelanders. The glass-walled front of the B. F. Goodrich Chemical Co. may look "slum-like" to you, but it is the source of hope for those Clevelanders who find economic support in its activity.

I do not wish to make a case for ugliness, whatever ugliness is. I do wish to make a case for service. If a city forum serves its people better, there must be some good in it. Our job is not to bemoan the past which is past, but to look at the dynamic chemicalization of the present, try to see where this will lead in the future, and then attempt to guide this future along the most helpful and useful lines, for with this usefulness comes beauty.

WILLIAM S. FOSTER, *editor*
American City Magazine
New York City

■ FORUM *neither believes that useful activity will always look beautiful, nor that wealth will necessarily produce beauty. What is necessary is an understanding of what is good looking and what is not.* FORUM *is dedicated to broadening this understanding.*—ED.

Forum:

I read with great interest your criticism of Cleveland's Euclid Avenue ["The Gli

continued on page

tering Slum on Main Street," FORUM, April '59].

All your points are certainly valid, and the results are more than apparent to us living in Cleveland. It would seem that I am one of the guilty people who has done nothing constructive to help.

JOHN TERENCE KELLY, *architect*
Cleveland

Forum:

Your article on "The Glittering Slum on Main Street" is probably one of the finest examples of criticism of nonplanning and nonarchitecture that has been done.

Our planning commission would benefit greatly from this article and I would appreciate having ten extra copies.

I encourage you to continue your criticism of planning as well as architecture.

RICHARD E. GAMBLE, *city planner*
Menlo Park, Calif.

THE NEW YORK TIMES

CIVIC PILLBOX

Forum:

As an almost life-long resident of Brooklyn and as one who daily works near the so-called Civic Center area, I am completely appalled by the shape of things to come here (and some already here). The photo above is but one sample of the concrete pillbox construction being designed and erected.

Considering the amount of money being expended on these buildings, a little imagination and a few grains of esthetics would have been in order.

EDITH EVERETT
Brooklyn

RAPID TRANSIT RENASCENCE

Forum:

I have read with interest your April editorial "Arresting the Highwaymen."

I take issue with only one statement: ". . . a really modern [rapid transit] system, elaborately planned but almost totally quiescent since 1956."

The rapid transit program here is anything but quiescent and is, in fact, beginning its period of most intensive activity. With the preparatory work out of the way, the district plans to retain three of the nation's most eminent engineering consulting firms and one or possibly two of the nation's leading financial consulting firms. These two teams of consultants will be given a deadline of May 1960 to complete in detailed and specific form the plan for the world's most modern and efficient rail rapid transit system serving the Bay Area. It is our hope that we can place these plans before the voters in support of a general obligation bond issue in November 1960.

The antifreeway sentiment discussed in your editorial is only one facet of the increasing support which rapid transit is receiving in the Bay Area. We have every hope that our plan will be successful and will contribute to a renascence in transit in metropolitan areas elsewhere in the country.

B. R. STOKES, *director of information*
Bay Area Rapid Transit District
San Francisco

GRAND RAPIDS' DESIGNERS

Forum:

I was extremely disturbed by your reference "as out of place as Grand Rapids furniture in a sleek modern house" in your March editorial on "Highway borax."

It is true that Grand Rapids manufacturers as a group do not confine themselves to the sterile designs of "the angry young men." But, in any cross-sectional study of fine furniture design—from traditional through contemporary to extremely modern—the names of designers and manufacturers in the Grand Rapids area will always be found among the leaders.

The name of no other city is so synonymous with furniture as is Grand Rapids. It is, therefore, extremely important that any reference to Grand Rapids be in its proper context—a place where fine design is the rule rather than the exception.

WESLEY AVES, *president*
Wesley Aves & Assoc.
Grand Rapids

Forum:

Such names as Saarinen-Swanson, William Millington, Ralph Widdicombe, Finn Juhl, Paul Frankl, Winsor White, Renzo Rutili, Bert England, Nakashima, Robsjohn-Gibbings, John Wisner, Virginia Conner Dick, William Pahlmann, are but a few of the designers who have been employed by Grand Rapids manufacturers.

BARRY STUART, *president*
Grand Rapids Furniture Market Assn.
Grand Rapids

■ FORUM *apologizes to Grand Rapids for having unwittingly used a simile long since outdated.*—ED.

STEEL CAPACITY

Forum:

We call to your attention an apparent misunderstanding of the implications of structural steel expansion as interpreted by you in your article, "Needed soon: more materials capacity" [FORUM, Nov. '58].

It is true that approximately 60 per cent of the pre-expansion capacity of 6 million tons of heavy structural shapes went to the construction industry, providing an availability of approximately 3.6 million tons. As you state in your article, capacity is being increased to 8 million tons of rolling capacity, which will be completely in existence during 1959. The fact which changes your assumption with respect to availability of steel for construction is that virtually all of this 2-million-ton increase in capacity is in the form of wide-flange beams. Since essentially the entire output of wide-flange beams is directed to the construction industry, it is apparent that to the historic 60 per cent or 3.6 million tons of pre-expansion capacity should be added almost the entire 2 million tons of added capacity to get the true picture of availability of structural shapes for construction. Such an addition would mean 5.6 million tons which would be virtually the entire amount which you expect the building industry to require by 1967 and would place structural steel in the most favorable capacity-demand situation.

The significance of this capacity increase in structural shapes being devoted almost entirely to the wide-flange beams for the industry has not been generally understood.

WILLIAM H. JESS, *manager of publications*
Bethlehem Steel Co.
Bethlehem, Pa.

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